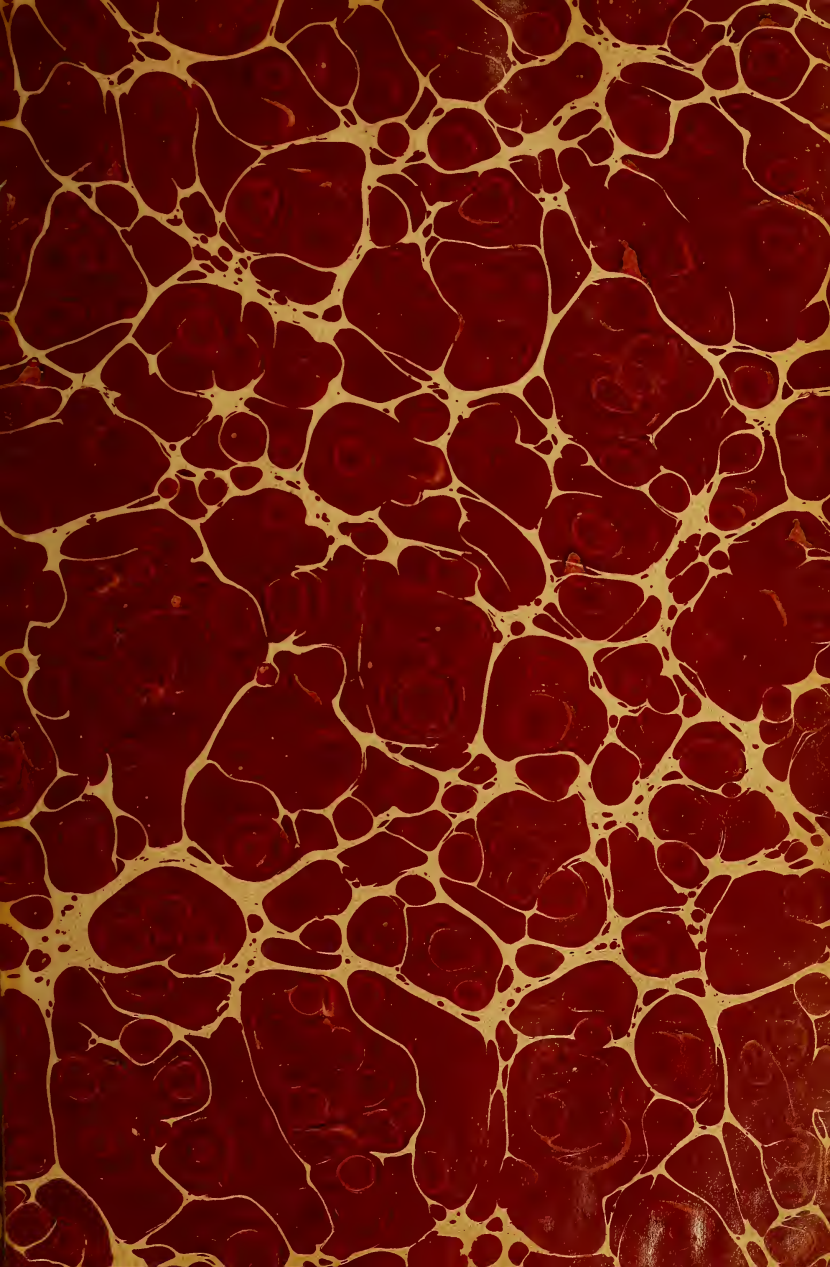




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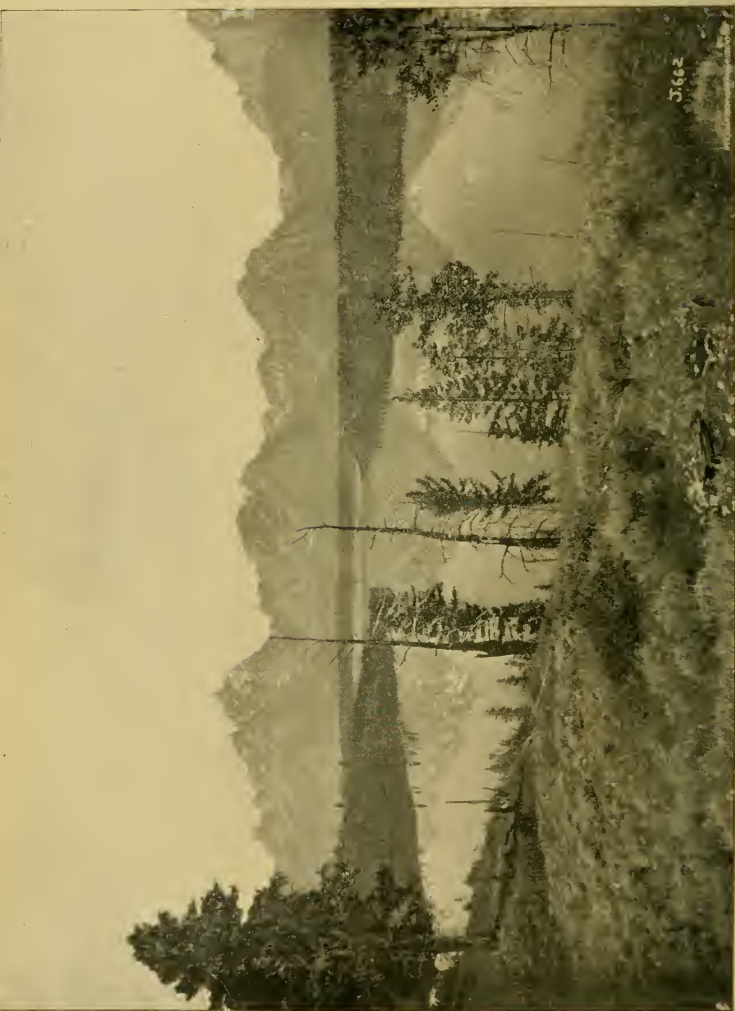


The State of



Wyoming

• 1898 •



JACKSON LAKE AND THE TETONS, WYOMING.

Compliments of

Charles W. Burdick.

Secretary of State of Wyoming.

THE STATE
OF
WYOMING

An Official Publication Containing Relia-
ble Information Concerning the
Resources of the State.

COMPILED BY

CHARLES W. BURDICK,
Secretary of State.

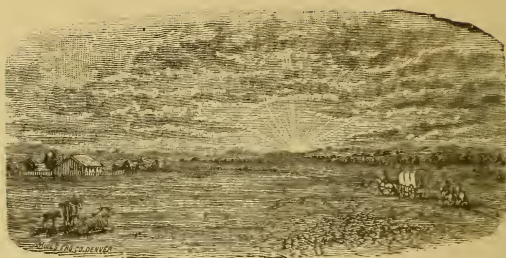
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CONTENTS.

	PAGE
Introduction	5
Wyoming	7
Albany County—	
By Geo. W. Fox	9
Big Horn County—	
By W. D. Pickett	13
Carbon County—	
By J. F. Crawford	18
Converse County	22
Crook County—	
By Milo A. Adams	24
Fremont County—	
By C. G. Coutant	27
Johnson County	29
Laramie County—	
By Robt. C. Morris... ..	31
Natrona County—	
By Marion P. Wheeler	35
Sheridan County—	
By E. Gillette	37
Sweetwater County	40
Uinta County—	
By George S. Marx	42
Weston County	45
Agricultural Development—	
By Elwood Mead	47
Taxes and Public Indebtedness	61
Mineral Resources—	
By Wilbur C. Knight,	63

1-6664

A Catalogue of Wyoming Minerals—

By Wilbur C. Knight..... 73

Output of Coal in Wyoming..... 78

Banking Facilities and Interest Rates..... 80

Horticulture—

By B. C. Buffum..... 81

Wages and Cost of Living..... 91

Public Buildings and Institutions..... 93

Wyoming Indians—

By Joseph A. Breckons..... 99

Educational advantages—

Estelle Reel..... 100

Suffrage Qualifications..... 106

Climate of Wyoming—

By W. S. Palmer..... 106

Railroad and Telegraph Facilities..... 110

Live Stock—

By A. A. Holcomb..... 112

Government Lands and How the Same May be Acquired—

By W. E. Chaplin..... 114

Public Libraries..... 119

State Lands and How They May be Acquired —

By A. J. Parshall..... 120

Stock Companies—Fees..... 125

How to Secure the Use of Water for Irrigation..... 126

The Mining Laws —

By J. A. Van Orsdel..... 128

Property Valuation for 1896 and 1897..... 135

Post Offices..... 136

List of Newspapers..... 139

The Yellowstone National Park—

George S. Marx..... 140

Hunting and Fishing—Closed Season..... 141

Brief Notes..... 144

Elevation of Wyoming Cities..... 147

Altitude of Mountains 148

INTRODUCTORY.

Office of the Secretary of State,
Cheyenne, Wyo., July 15, 1898.

Under the provisions of Chapter 34, Session Laws of 1888, the Secretary of state is authorized to prepare, publish and distribute all such useful information as is designed to convey correct and full information on all matters pertaining to the growth and development of the agricultural, manufacturing, commercial, stock and mining interests of the state; and pursuant to the provisions of that statute, the present volume has been prepared. Its purpose, as expressed in the statute, is to secure a liberal and extensive advertisement of the resources and that class of persons who are looking to the west as a possible future home, or looking to the same locality for opportunities of investing surplus capital, such facts and information as persons under those circumstances ordinarily desire.

Within the limits of such a volume as the statute contemplates, it would be impossible to present detailed information concerning all of the varied resources of the state, and therefore the effort has been confined to a summary of the particular advantages of each county, together with a comprehensive article upon particular resources or industries of the state, each article having been prepared by a person well qualified by training, experience and observation to treat the subject assigned to him.

In this respect every statement made may be regarded as from an official source, and the strictest reliability, without suspicion of exaggeration, has been sought, with a hope that all persons interested in the State of Wyoming into whose hands

this little publication may fall, will discover from its general tone that, if anything, it under-estimates rather than over-estimates the advantages and resources of the state.

If the publication meets with the approval of the people of the state, and brings, as I hope it will, benefit to the state, by setting forth in readable and attractive form, its many resources, the credit for the result is due mainly to the co-operation which has been so willingly given by the many contributors whose names precede the several articles prepared by them. To these and also to many others, the thanks of this department are due and their services are gratefully acknowledged.

CHARLES W. BURDICK,
Secretary of State.



WYOMING.

Wyoming was organized as a territory July 25, 1868, from what was then the southwestern portion of Dakota, northeastern part of Utah, and eastern part of Idaho. On July 10, 1890, the territory was admitted as a state by act of Congress, being the forty-fourth state in order of admission.

Its geographical location classes it among the states of the inter-mountain or arid region, being bounded on the north by Montana, on the east by Dakota and Nebraska, on the south by Colorado and Utah, and on the west by Utah, Idaho and Montana. Its length from east to west is 355 miles; width from north to south 276 miles, and it has an area of 97,890⁺ square miles, or 62,645,120 acres.

The region now comprised within the limits of the state was early explored by Canadian explorers and other venturesome persons, but the first white settlement appears to have been established at Fort Laramie, in the eastern part of the state, in the year 1834. Subsequently trading posts were established in other localities, and still later the building of the Union Pacific railroad and the adaptation of the western country to the cattle business led to further settlement.

In general appearance the country is mountainous, with valleys, rolling plains and plateaus, the latter covered with grasses of great nutrition and furnishing admirable pasture for live stock, while the mean elevation is 6,000 feet above sea level, with extremes ranging from 3,000 to 14,000 feet. Probably ten million acres of the total area of the state are covered with timber.

Flowing east or west, according as their source is on the eastern or western slope of the main range of the Rocky Mountains which cross the state from north to south, are numerous streams, among the number being the North Platte, Snake River, Green River and the Yellowstone. None of these streams are navigable in a commercial sense, but they furnish water for the irrigation and development of the surrounding

country and in some instances are used for the transportation of timber.

The soil is a light sandy loam, darker and richer in the valleys. When reduced by the application of water, bountiful returns of agricultural products, with the exception of such as thrive only at low altitudes and warm, damp climates, are secured. It is estimated that ten million acres of the area of the state are suitable for agricultural purposes by irrigation.

There are thirteen Counties, four Judicial Districts, four Irrigation Districts, many School Districts, but no township organization. The capital is located at Cheyenne, in the southeastern corner of the state.

The climate is similar to that of the mountain region generally, and is not, as sometimes erroneously supposed, extraordinarily severe in the winter. The average mean temperature for the year is about 44 degrees, varying somewhat according to elevation, and the atmosphere is pure and rarified, with but few cloudy days. High winds sometimes prevail during the spring and fall, but cyclones and tornadoes are unknown, while the dryness of the atmosphere tends to ameliorate the effects of extreme cold. Snow storms are usually followed by high winds, which serve to uncover the pastures so that live stock get the benefit of the grasses cured by the previous summer's sun, and as the cured native grasses retain their nutrition, it enables the stockman to support his stock upon the open range with little additional food. The severity and frequency of western blizzards has been largely exaggerated, so that some people consider the western climate as synonymous with constant storms, dangerous to life. Nothing could be farther from the truth, and but few climates are more bracing, healthful or pleasant than the climate of the mountain region of the Western States. The almost constant sunlight is not only pleasant, but beneficial from a sanitary standpoint, and it is a well recognized fact in the medical profession that certain diseases, notably pulmonary affections, are much benefited by change from the States of lower altitudes to Wyoming or adjacent States.

Coal mining and raising live stock are the two most important business interests of the State. As will be noticed elsewhere in this publication, the supply of coal underlying the state is apparently inexhaustible, and constant employment is furnished to a great many miners. The raising of live stock, however, in its various departments, probably claims the attention of more people than any other industry, and the facilities for prosecuting that business are such as to commend it to the

attention of prospective settlers. It is a noticeable feature of the present condition of the state than many of the former large herds of cattle have of recent years been reduced without, however, materially reducing the total number of cattle in the State, while the number of small herds owned by ranchmen and farmers has largely increased, and it is doubtful if any other State can show an agricultural population whose financial condition averages better than that of Wyoming's ranchmen. Many are here to testify to the benefits and profits derived by them from the use of the free pasture lands of the open range, with its nutritious native grasses, the opportunities of acquiring government land, cheap fuel and healthy climate, and the large area of the State in proportion to the present population is sufficient evidence that opportunities by which others have heretofore profited still offer to the prospective settler.

ALBANY COUNTY.

BY HON. GEO. W. FOX,
State Senator.

STATISTICS.—Albany County, while the smallest County in the State, is one of the most important in many respects. Situated in the southern part, joining the State of Colorado on the south, Laramie County on the east, Carbon County on the west, and Converse County on the north, its area embraces 5,076 square miles, or 3,248,640 acres; of this 998,000 are listed for taxation, 336,000 as railway grant lands, and 662,000 by individuals; total County valuation, \$3,673,660; total tax levy, including State, 20.2 mills; County bonded indebtedness, \$142,000, bearing 6 per cent interest. The Laramie Plains comprise about one-half of the area of the county, being in the central part; the Medicine Bow range of mountains being on the west of the plains and the Black Hills range on the east and north, terminating at the historical landmark, Laramie

Peak. The plains proper are at an altitude of about 7,000 feet, while the Medicine Bow range rises to the region of perpetual snow.

The Union Pacific railroad extends through the county, its mileage being 95.49 miles, and valued for assessment purposes at \$872,778.60.

COUNTY SEAT AND PRINCIPAL TOWN.—Laramie, the principal town and county seat, is situated at the junction of the railroad and the Big Laramie river, near the central portion of the plains. The population is 7,000. There is located the University of Wyoming, an institution in which the whole State is deeply interested. The faculty is composed of educators of eminent ability in their several branches; the School of Mines gives a thorough course in mineralogy and assaying; the Agricultural College department runs an experimental farm in connection with the institution, demonstrating that farming and the raising of nearly all of the agricultural products can be carried on profitably on the mountain plateaus at this high altitude.

The city is lighted by electricity, and has a fine system of free waterworks. Several saw mills in the adjacent mountains supply native lumber for all purposes. Brick is made of good quality, and building stone of good color and excellent quality is found in abundance near the city. The University and Cathedral, two very fine structures, are built of the native stone.

The State Fish Hatchery, an institution of great value to the State in supplying and stocking the many different streams of the State with game fish, is located a short distance from the city on one of the mountain streams.

The State Penitentiary is located at the western city limits on the banks of the Laramie River.

SCHOOLS.—The county has a fine public school system, the number of schools being twenty-five, and the number of children of school age 1,352. The High School at Laramie is the equal of many similar institutions in larger cities.

MANUFACTURING.—The Laramie Steel and Iron Company is the largest manufacturing concern in the state, owning and operating a well-equipped rolling mill and machine shop. This company gives constant employment to one hundred and fifty men, turning out a large tonnage of merchant iron and railway supplies.

The Standard Cement Plaster Company has a fine plant and an unlimited supply of material from which to manufacture its product, which is shipped both east and west in large quantities.

The Rocky Mountain Plaster Company at Red Buttes has a plant of large capacity and makes a fine grade of white finish from the gypsum beds in that vicinity.

At Laramie is located a substantial glass manufacturing plant, with all the ingredients for the manufacture of glass in the immediate vicinity. The operation of the plant proved the superiority of the materials, but lack of capital has compelled the suspension of the enterprise for the time being. There is a grand opportunity here now for glass making by men of experience and sufficient capital to operate the plant.

The Flouring Mill erected before the panic of 1893 has been idle since that date, but with the increased acreage of grain being planted this year, it is proposed to offer inducements to the right party to operate it in the future.

The Haley Creamery at Oasis (or Wyoming station) is a flourishing institution. Its product, which is large, finds a ready market and is an index of what may be done in that line.

LIVE STOCK.—The principal industrial wealth of the county is in its grazing and live stock interests, cattle, sheep and horses leading in the order named. There were at the last general assessment 24,200 head of cattle, 51,200 sheep, and 7080 horses, in all assessed at \$502,773.

AGRICULTURE.—Agriculture is being more extensively engaged in now than in years past. A large amount of wheat, oats and barley are produced annually and command a higher price than in any other market. The oats, especially, are well filled and weigh from forty to forty-five pounds to the bushel. This valley offers a good inducement for an oatmeal mill on account of the superior quality of the native oats. Hay is the principal crop. It is cut from native grasses, the crop being matured by irrigation, and is quite generally fed during the winter season. Large numbers of fat beeves are annually shipped to market in the spring months, having had no other feed but the native hay, which possesses nutritive qualities of high order.

MINING.—Mining for the precious metals has greater promise now of coming to the front and supplanting all other industries than it has had heretofore. The Medicine Bow range is strictly a mineral bearing formation. Fine ore crop-pings are found distributed throughout its entire area. There are the Jelm Mountain, Keystone, Centennial, La Plata, French Creek, Copper Hill, and Three Mile districts, all of fine promise, it being difficult to distinguish which is best, as the character of the ores are different. In some localities the gold predominates, in others lead, silver, copper, etc. Some high grade

ore has been shipped, enough to demonstrate that systematic development will in the future unearth fortunes. Every creek heading towards the snowy range contains placer gold. Douglas Creek, French Creek, Lake Creek, Muddy Creek and numerous others are known to be rich in the precious metal. Extensive preparations are now under way for working these creeks and tributaries with expensive hydraulics and dredging machinery, large amounts of capital having been invested in them. The Black Hills range are also extensively mineralized, showing quartz carrying gold, silver, copper, etc.

Near the head of the Sybille Canyon the largest deposit of plumbago to be found in the United States is located, the quality from the surface is marketable, while some of the foliated varieties are very valuable. In this district there are some extensive ochre beds which only require a mill to produce an unlimited quantity of superior paint.

Asbestos is found in the northern part of the county in large deposits. The quality from surface prospects is not the best, but is suitable for the manufacture of paint and many other uses.

The natural soda deposits, twelve miles south of Laramie, are of very large extent, and the product has been to some extent utilized in glass making, the product, when calcined, being superior to the imported article.

The mining possibilities of Albany county are such that it is safe to predict in the future this line of industry will supplant all others.

CLIMATE.—The climate during the summer months is perfect, the nights being cool and the days not excessively hot; the winter months are dry and the cold is not severe. Live stock winter on the open plains without shelter.

STREAMS.—The County is well watered by many fine streams. The Big and Little Laramie rivers are the largest, but there are numerous smaller streams of clear spring water, suitable for domestic use and irrigation purposes.

FISHING.—Trout fishing is the great summer sport. There is no place in all the Rocky Mountains where trout are more abundant than in the headwaters of the Laramie Rivers. The streams have been stocked from the State Hatchery with all known kinds of the trout family. It is not uncommon to land trout weighing from six to eight pounds each. Resorts have been established on the rivers for the accommodation of sportsmen and their families who want to spend a few days in the wilds of the mountains. Those who seek these pleasure

resorts come from various portions of the United States, and the number is on the increase from year to year.

TIMBER.—On the Medicine Bow range, in the western part of the county, is found an abundance of spruce and pine timber of good quality and convenient to the local market.

BIG HORN COUNTY.

BY HON. W. D. PICKETT.

TOPOGRAPHY.—Big Horn, the last organized County of the State, consists of that portion of the northwestern corner known as the "Big Horn Basin." This is one of the most remarkable basins, in many respects, situated on either side of the Great Continental Divide. This is true, whether we consider its great area, the lofty mountains enclosing it on all sides except the north, its equable climate or the fertility of its soil. On the east looms up the Big Horn range, some of its peaks rising 12,000 feet above sea level; on the west towers the equally high peaks of the Shoshone range, spurs of the Great Continental Divide; on the south is the Owl range, a spur of the continental divide connecting it with the southern end of the Big Horn range. The usual elevation of the divides connecting these peaks is from 9,000 to 11,000 feet above sea level. Among these mountains are found some of the finest examples of mountain and canyon scenery to be seen on this continent.

Passing centrally through this basin, in a northerly direction, for more than one hundred miles, in its meandering, is the Big Horn river. Its entrance into the basin has been made in some past convulsion of nature through the Owl range, by an impassable canyon of about four miles in length. Its exit from the basin to the north has been made by cutting through the northerly end of the Big Horn range by a very remarkable canyon of about twenty miles in length, its walls

rising almost vertically 1,200 to 1,500 feet above the water. Intermediate between these canyons this river passes through Sheep mountain, a secondary and detached range, by a canyon of about three miles length, but equally as interesting as the other two. The Big Horn range west of its lower canyon, is designated Pryor Mountain, which gradually recedes in height until it drops to the level of the plain bordering the Clark's Fork of the Yellowstone. Around the base of this mountain is the natural outlet from the Big Horn Basin. The northern boundary of Big Horn county is the Montana state line (the 45th parallel), which crosses the Lower Canyon just alluded to) about four miles north of its upper or southern end.

CLIMATE.—The topography of this county has thus been described so much in detail, because it is believed its climatology is much influenced by its prominent features. The moisture that is deposited in this basin is transported from the Pacific Ocean on westerly and southwesterly winds moving, at times, at high velocity. In passing over the continental divide and the mass of mountains lying west of its inner rim (some thirty to forty miles in width), a large percentage of its moisture in winter is deposited in snow. The residue is deposited within its inner rim, but not to such a depth as to materially interfere with the grazing of stock. This is especially true of the western slope, as snow falls are generally followed by westerly winds that sweep the snow into the gulches. On the western slope the snowfall rarely exceeds six inches in depth at any one time, which is soon dissipated by wind. On the eastern slope there is not so much wind, and though the snowfall is not believed to be greater, it lies for longer periods and to greater depth, much to the benefit of agricultural crops in summer. The records of one of the voluntary weather bureau stations (situated at an elevation of about 6,500 feet) on the western slope, shows an average annual snowfall for the past four years of forty-seven and a half inches. Average annual precipitation for same period, eleven and nine-tenths inches. The lowest temperature for the same period was 28 degrees F. below zero; the highest temperature for the same period, 88 degrees above zero, F. In the lower altitudes there is usually somewhat lower temperatures in winter, and an extreme temperature of 100 to 105 degrees in shade during summer. By ascending from the lower to the higher altitudes, almost any climate can be obtained in summer. At an altitude of about 6,000 feet, the summer temperature is about the same as that of Lower California in winter, except it is much dryer and more bracing. During winter the air is so dry and exhilarating

that temperatures trying at lower altitudes are not noticeably cold. Indeed, there is so much sunshine in winter that except for a few exceptionally cold days, it is frequently the pleasantest season of the year.

AREA.—As its topography indicates, the only practicable outlet at present for the trade of Big Horn county is to the north, into Montana, and to the Northern Pacific Railroad; either at Red Lodge, Montana, reached by good natural roads, within about one hundred miles from its center, or at Billings, Montana, by equally as good natural roads, though farther in distance.

The area of this County is about one hundred miles square, or about 10,000 square miles. This includes a strip of about fifteen miles' width on its western border, which has been constituted into a "Timber Reserve" by act of Congress.

AGRICULTURE AND STOCK RAISING.—It is within bounds to assert that every square mile of this area, except a small percentage forming the slopes of the high mountain peaks, can be utilized in summer or winter for agriculture or the grazing of stock, as proven by the experience of ten years with cattle, horses and sheep, the high mountain plateaus with their intervening valleys, up to an elevation of 10,500 feet, in summer and until covered with snow in the fall, produce grass of sufficient fattening properties for summer feed. From elevations from 7,500 feet to 10,500 feet, all stock keep fat for four months of the year. Below 7,500 elevation, stock do well, summer and winter, with the rare exception of heavy snowfalls that are not followed by wind sufficient to bare the ground. This, of course, where the range is not over-stocked.

AGRICULTURE.—Within the belt lying between 5,500 and 6,500 feet elevation, with irrigation, timothy and red top do exceptionally well; alfalfa not so well, but producing two good cuttings. Below this belt alfalfa, with ordinary good management, will yield three good cuttings. Its seed comes to full maturity, and of good quality. All the small grains that have been experimented with, such as wheat, barley and oats, give large yields and of excellent quality. It is believed that in no locality of the world are these grains of superior quality or in larger yields per acre. Statistics could be produced to sustain this claim did space permit. Indian corn, in a favorable season, produces well. All the roots, such as potatoes, carrots, rutabagas and beets of all kinds, thrive excellently well up to 6,500 feet elevation. It is not uncommon, where well cultivated, for beets and rutabagas to attain weights of ten to fifteen pounds and solid to the core. Of melons, the canta-

loupe matures of excellent quality; so does the watermelon, though to less extent. On the advent of a railroad, it is believed there is no better location for a sugar-beet factory west of the Missouri, than at some central point in this County, and of paying capacity. The potato is a large yielder and of quality unsurpassed anywhere. Such garden vegetables as radishes, lettuce, cauliflower, beans and peas, do well at all altitudes. Radishes, lettuce, and cauliflower come to high perfection above 5,500 feet altitude and are of unsurpassed quality and flavor.

HORTICULTURE.—All the small fruits, such as raspberries, currants, strawberries and gooseberries, grow wild, and where tame varieties have been tried, do well.

POPULATION—COUNTY DEBT—TAXES.—On account of the absence of any railway facilities heretofore (the nearest railway point being at least 100 miles from its center), the population of this County is not large to area, but is increasing. It has at present about 3,500 souls.

The taxable wealth at this time is about \$1,100,000. The rate of taxation for 1898 is nineteen mills. The new county has no debt, except what it may inherit as its proportion of the debts of Sheridan, Johnson and Fremont Counties, from which Counties it was segregated on the first of January, 1897. The settlement of this question is now in the Courts, and a decision of the whole question by the Supreme Court of the State is looked for at any time. It is believed its share of the joint debt will be less than \$20,000; a small debt, taking in view its present condition and future prospects.

IRRIGATION.—In addition to the large volume of water delivered by the Big Horn river, running centrally through the County, its large and numerous tributaries furnish a great superabundance of water for irrigating the large bodies of land that can be gotten under ditch. From the east flows Kirby, No Wood, and Shell creeks; from the west comes Owl creek and its much larger tributaries of Grey Bull and Wood rivers; then the two forks of the Stinking river, and still farther to the north the Clark's Fork of the Yellowstone. Only such portions of the irrigable lands that could be gotten under ditch at small cost have thus far been taken up. To such tracts add the quantity of land that, according to the estimate of the State Engineer, Mr. Elwood Mead, can be gotten under the various ditches contracted for or projected of over four hundred thousand acres, there is a grand total of a half million acres of as productive land as, according to his estimate, is found within the arid belt. To irrigate these large bodies of valuable land,



INDIAN SIGN WRITING, BIG HORN MOUNTAINS.



ditches have either been contracted for, under the arid land law, or have been projected. With these lands reclaimed, Big Horn county will be the richest agricultural county in the state.

MINERALS.—In minerals the prospect is no less flattering. Beds of coal of good quality outcrop in many parts of the county. On the east side are immense masses of gypsum, which also outcrop on the west side near Cody. It is believed that large masses of iron ore exist in a locality accessible to a railroad when the railway system now projected through the county is completed. In the rim of the mountains enclosing this basin, prospects indicate many valuable mines of gold and silver. On the head of the Grey Bull river the Gold Reef Mining Company are boring a tunnel (now about 600 feet in length) towards a wide lead of gold bearing rock. On the head of Wood river are many leads of low grade silver ore, and some gold bearing rock. The well known Bald Mountain mines, on the west side, lie partly in this county. Farther to the north the Sunlight mines are located, on the waters of the Clark's Fork. All these mines would become valuable properties were there adequate railway facilities to develop them and carry off their products.

STOCK.—On account of its well protected situation, the nutritious quality of its grasses, and its freedom from cold blizzards not uncommon in other parts of the northwest, this basin has long been the home of large herds of cattle. Of late years, however, these large herds have been cleared out, until only one or two remain. In 1897 the assessment showed 32,605 head of cattle, 9,207 head of horses, and 55,489 head of sheep. In addition to these, however, there are about 100,000 head of sheep from Montana and the counties south, that have their summer range in the mountains and foothills on each side of the basin. Small herds of cattle are taking the place of the larger herds that have been closed out.

GAME AND FISH.—To the tourist and health seeker, this basin presents many attractions. Mountain trout abound in all the streams near the mountains; elk, deer and mountain sheep are fairly abundant in the mountains. Then there are the famous Big Horn Hot Springs in the southern border of the county, that are considered scarcely second to the famous Hot Springs of Arkansas, for a great variety of diseases and ailments. To those fond of mountain and canyon scenery, there will be found no greater attractions in the country. Besides the canyons of the Big Horn before mentioned, there is the Canyon of Clark's Fork of the Yellowstone, that is not surpassed by the Block Canyon of the Arkansas, or even in many

respects by the Grand Canyon of the Colorado. This stream for twelve miles has cut through a solid granite formation, its walls sometimes vertical at the lower end, attaining a height of 1,500 feet above the water. Below this point, the canyon opens out for six miles, the highest peak on the east side being about 400 feet above the water in about one-half mile distance from the iron channel.

CARBON COUNTY.

BY J. F. CRAWFORD.

Carbon county was organized in November, 1869. It then included all that portion of the Territory of Wyoming lying between a point one-half mile east of Aurora station, on the Union Pacific railroad, and the one hundred and seventh degree and thirty minutes west longitude, on the west, and the north and south boundaries of the territory. Sheridan, Johnson and Natrona counties on the north have been organized out of territory taken from the northern portion of the county, and its area has been reduced from 22,000 square miles to 11,061 square miles. It contains about 7,079,040 acres of land. Its population is approximately 9,000.

Its county indebtedness is \$144,000, and the rate of taxation is 19.5 mills. The total number of acres listed for taxation is 964,630.81, and the valuation of all real estate in the county, including town lots, is \$1,144,247.85; total value of all assessable property in the county, \$3,411,775.63. The Union Pacific railroad runs across the county from east to west, giving 103.53 miles of railroad, valued at \$867,477.

COUNTY SEAT AND PRINCIPAL TOWNS.

RAWLINS is on the Union Pacific railroad, and is the county seat of Carbon county. Altitude, about 7,000 feet. It has a population of about 2,500, is the western terminus of the

east and west mountain divisions of the road, and has round-houses and extensive machine shops. It is a distributing point for an outlying country, both north and south of the railroad. Daily and tri-weekly stages leave here for points north and south. The new State Penitentiary, costing \$100,000, is located here, and it also has a substantial stone court house, a fine public school building, which cost, respectively, \$50,000 and \$35,000. It is incorporated, and its city indebtedness is \$35,000.

SARATOGA is situated on the North Platte river, twenty-eight miles south of Fort Steele, in the center of a beautiful valley; population, about 400. Has a flouring mill, public library, two hotels, and good representation of merchandising establishments. Takes its name from the hot mineral springs of water formed there, the waters of which possess wonderful curative properties. It has a daily mail from Fort Steele, the nearest railroad point, and is the distributing mail point for the towns of Encampment, Collins, Bennett, Mead, French and Pearl, Colorado, and is an outfitting point for the Grand Encampment mines.

FORT STEELE.—This town is situated on the site of the old fort known as Fort Fred Steele, on the North Platte river, at the point where that stream is crossed by the Union Pacific railroad. Has about 200 inhabitants. It has a system of water works, owned by private parties.

ENCAMPMENT.—This is a town of recent origin, brought forth by the prospects of the new gold fields discovered in the Grand Encampment district. It is situated on the Grand Encampment river, some twenty miles south of Saratoga.

CARBON is located on the Union Pacific railroad, in the eastern part of the county, is a coal mining town of about 800 inhabitants. It is incorporated, and is supported chiefly by the coal industry.

MEDICINE BOW.—This town lies on the eastern boundary of the county, on the line of the Union Pacific railroad, and contains about 200 inhabitants.

HANNA.—This is a coal mining town in the northeastern part of the county, reached by a spur from the Union Pacific road, which branches off at Allen junction, three miles east of Medicine Bow. It has several hundred inhabitants, who are exclusively engaged in coal mining.

DOGGETT is situated on the banks of the Grand Encampment river, twenty miles south of Saratoga, and is supported by the adjacent mining and stock raising country. All kinds of business are represented.

Other towns of lesser note are Baggs, Dixon and Gilman, all situated in the extreme southern portion of the county.

SCHOOLS.—The county contains a good public school system. The number of schools is thirty-six, and the number of children of school age being 1,118.

LIVE STOCK.—One of the chief industries of the county up to the present time, is its live stock interests. Of sheep there were, for the year 1897, 366,525, valued at \$658,641; of cattle, 18,972, valued at \$254,704; horses and mules there were 6,682, valued at \$92,920; all other kinds of stock were valued at \$4,435.

AGRICULTURE.—This industry has for many years been an important one, and is continually on the increase, and has assumed large proportions in the Upper Platte Valley country and the tributaries of the North Platte river. Wheat, oats and barley are raised in large quantities and command a ready price for home consumption. The wheat is of a very fine, plump grain, making the very best of flour. The oats are of a superior quality and run from forty-five to fifty pounds to the bushel. All of these crops yield abundantly. Hay is an important crop, and the yield per acre is very satisfactory. Timothy and red top grow luxuriantly, but the native hay, of which there is a large quantity raised, is much in favor. Alfalfa or Lucerne is a prime favorite, and there is a large acreage devoted to the production of that crop. It yields from three to four tons per acre, each year, of a very superior quality, much esteemed by all stockmen for its fat producing qualities. All kinds of vegetables and small fruits grow abundantly, and the entire home market is supplied by home production. All farming is by irrigation, which is acknowledged to be far superior to any other method.

The feeding of cattle and sheep for spring market is largely engaged in by the inhabitants of this county, who annually ship large numbers of sheep and fat beeves to eastern markets, commanding the highest market prices.

MINING.—The presence of gold, silver and copper, as well as all other precious metals in Carbon county, has long been known to its residents, and attempts have been made, from time to time, to work such leads as gave promise; but owing to lack of capital, the work has not been productive of much good. At the present time, however, there is great promise in this direction, especially in the Grand Encampment district, situated in the southern portion of Carbon county. Before the discovery of the Grand Encampment district, there had been several mines of gold and silver bearing rock of very

promising leads, patented in the region embraced by the extreme northwestern portion of that district.

The Grand Encampment discovery was made in the year 1896. It covers a large tract of country from eight to ten miles in width, by thirty-five to forty miles in length—and perhaps much larger. The country is mountainous, and is thickly interspersed with leads of varying thickness and value of mineral. These leads are from eight inches to ten feet in thickness, and show gold and copper in paying quantities. Many of them are being developed, and as depth is gained, the value of the ore increases.

The Battle Lake country, which is included in the Grand Encampment district, has one very fine copper mine, the Rambler, from which copper ore has been shipped in small quantities for the past three years, and which is now steadily producing a moderate quantity. It has a vein about four feet in thickness, the ore from which is 50 per cent copper. There are at least ten or fifteen very large and equally valuable copper leads in this same neighborhood, all of which will be opened up this year. This camp will probably be, within a few years, the largest and richest copper camp in the world. In this district are also found large deposits of asbestos and mica. Some eight miles west of the Battle Lake region lies the Northern Bell, a gold mine, tapping the vein, which is ten feet thick, at a depth of 250 feet from the surface. Assays from this mine have run as high as \$700. A ten stamp mill is used to crush the ore, which is treated also by the cyanide process.

Gold Hill, which lies to the east of Saratoga some twenty-five miles, also has many valuable leads, which are being systematically developed by eastern capitalists.

The streams from both ranges of mountains that empty their waters into the North Platte river, contain placer gold in paying quantities, and there are many locations of placer ground all over that region, but their development, owing to want of capital, has been slow.

The Seminoe district, in the extreme northern portion of the county, has long been known to hold much precious metal in the way of gold, but the ore has, up to this time, proved refractory and difficult to handle. Assays from the leads in that district show gold in paying quantities.

There are many other promising, yet undeveloped, districts in this county which will, as soon as capital can be interested, be developed and made to yield up their treasures.

COAL MINES.—One of the most important products of the county is its coal, of which there are mines located at Car-

bon, Hanna, Rawlins, Kindt and other points. The most productive mines are those located at Carbon and Hanna, where the mines are operated by the Union Pacific Railroad company. The total output of these mines for the year 1897 was 506,875 tons.

CLIMATE.—The climate of Carbon county is healthful, bracing and invigorating, mild and pleasant during the summer months and not severely cold or uncomfortable in the winter. It is peculiarly suited to the building up of weak lungs and is conducive to health and longevity in all classes.

WATER AND TIMBER.—Carbon county is well watered by mountain streams, the North Platte river flowing the entire length of the county from south to north. Nearly every portion is abundantly supplied with water for irrigation purposes. The numerous mountain ranges in the county are covered with an excellent quality of pine timber suitable for building purposes and for the manufacture of lumber, as well as for fuel.

GAME AND FISH.—Carbon county streams, while originally barren of trout, have been well stocked with every variety of that kind of fish, and are today the finest trout streams to be found anywhere. Trout weighing from ten to twelve pounds have been frequently taken from the North Platte river in recent years, and every stream swarms with the finny tribe. Game of all kinds, including bear, elk and deer, are to be found in the mountain ranges and timber, and sage grouse inhabit the plains and mountains, and the streams and lakes are well supplied with ducks and geese.

CONVERSE COUNTY.

Converse county, which was organized in 1887, has a population approximating 4,000. It has an area of 7,000 square miles and is bounded on the south by the counties of Laramie and Albany, on the north by Weston, on the west by Natrona, and on the east by the state lines of South Dakota and Nebraska. The North Platte river, with its many tributaries, flows through the central portion of the county, affording a bountiful water supply, for thousands of acres of land. Hun-

dreds of acres of land have been brought under cultivation, and its wide plains are among the best pasture lands of the state. The Fremont, Elkhorn & Missouri Valley railroad traverses its entire length from east to west; and the Cheyenne & Northern railroad gives an outlet to the south. The total assessed wealth of the county, in 1897, is given as \$1,523,800, divided as follows: Land and improvements, \$308,156; town lots and improvements, \$86,856; railroads and telegraph lines, \$478,953; cattle, \$300,069; horses, \$71,405; sheep, \$163,236; all other property, \$115,195. County bonded indebtedness, \$60,000.

Until a very late date the tract of country known as Converse county was given up to stock-growing. There are several thousand acres of land under cultivation to-day. Most of the cultivated acreage can be classed as bottom or low lands, bordering upon streams, although in the southeastern portion lands are producing good crops of corn, wheat and oats without irrigation. The principal crop in small grain is oats. With irrigation, oats have reached the enormous yield of eighty bushels to the acre, with a stool of six feet. Wheat will yield fifteen bushels on sod and twenty bushels on old ground. Rye and barley twenty bushels to the acre. Tame grasses—timothy, clover and millet—reach a luxurious growth. Alfalfa does well without irrigation, but, when placed under ditch affords two and three full crops per year. Corn makes a good crop in the eastern end of the county. Vegetables, under irrigation and in the bottom lands adjacent to streams, attain a growth equal to California's famous products. Potatoes yield several hundred bushels to the acre. Pumpkins and squashes reach a weight of one hundred and even one hundred and sixty pounds; cabbage, twenty-three pounds; turnips, twelve to fifteen pounds, and other vegetables in like proportion.

Converse county's chief mineral resources are coal, iron and copper. The finest coal found west of the Missouri river is in the Shawnee basin, fifty miles west of the Nebraska state line. Near Douglas is found a superior article of lignite, unsurpassed as a stove coal and a good steam fuel, but the vein is only two and one-half feet thick. At Inez, sixteen miles west of Douglas, the vein is seven feet thick, with a sandstone roof, and the coal has no superior as a stove or steam fuel. At Glenrock, twenty miles further west, the output of the mines nearly equals in point of quality those of Inez. The vein here is about six feet thick, with a sandstone roof. Coal "crops out" in greater or less veins in a hundred localities throughout the western portion of the county. Iron ore of a high per cent abounds in western Converse county, and particularly in

the northwestern portion. Assays of \$68 in gold and silver, \$240 in "horn" silver, and 40 to 50 per cent in copper have been obtained from prospect holes all along the Laramie range in this county, and particularly from Spring canyon, some fifteen miles south of Douglas. Limestone is found in abundance and quarries of superior quality of sandstone have been located. Marble equal to the best in "grain" and variety and beautiful color, has been discovered in several localities, while gypsum, from which is made the plaster of paris of commerce, exists in inexhaustible quantities. Large deposits of mica, glass sand and potters' clay have also been located.

Plenty of timber grows in the mountains and foothills, principally pine and spruce, and native lumber is supplied at reasonable prices. There is plenty of good land in the county subject to location, but it is being rapidly taken up. Lubricating oil is found in different portions of the county. Capital is at present engaged in developing this industry.

Douglas, the county seat, is located on the North Platte river and on the line of the Fremont, Elkhorn & Missouri Valley railroad, and has a population of about 1,000. The town is quite prosperous, being the center of a large and growing trade. The high prices received for cattle, sheep, wool and all farm products, greatly add to its present prosperity. Its numerous business places, substantial dwellings, well graded streets, sidewalks, waterworks and other improvements, attest the prosperity of the place.

Other towns of importance are Glenrock, Lusk, Manville, the former a coal mining town of about 900 population, and the two latter towns to which agriculture and stock-raising districts are tributary.

CROOK COUNTY.

BY MILO A. ADAMS.

Crook county is situated in the northeastern corner of the state, bounded on the east by Dakota, on the north by Montana, on the west by Sheridan and Johnson counties, and on the south by Weston county.



A WYOMING GOLD MINE.

STATISTICS.—It is one hundred and two miles long by sixty wide, and has an area of 6,120 square miles, or about 3,916,800 acres. Lands assessed, 149,606 acres; total assessed value of all property, \$1,658,184; county tax levy, 16.5 mills; bonded indebtedness, \$80,000; number of schools, forty; number of school children, 599; population, estimated at 4,000.

The county is traversed by the Grand Island & Northern railroad, with a mileage of 79.1 miles, assessed at \$308,139.

COUNTY SEAT AND PRINCIPAL TOWN.—The county seat and principal town is Sundance, with a population of about 500; situated at the foot of Sundance mountain, on the banks of Sundance creek, a beautiful mountain stream, and in the center of a fertile district. The city owns its system of waterworks, substantial city hall, fire apparatus, etc. Merchandising in all its branches, banking and commercial interests are well represented. The municipal bonded indebtedness is \$15,000, at 6 per cent interest.

ALTITUDE AND CLIMATE.—The altitude of Crook county averages about 4,000 feet above sea level, and the atmosphere is dry, bracing and healthful, with a mean annual temperature of 41.1 degrees. The yearly precipitation averages twenty-four inches, and agricultural products are grown throughout this county without irrigation.

SCHOOLS.—Throughout the county are good schools in each locality where the population justifies their establishment, there being in all forty, each one presided over by a competent instructor.

AGRICULTURE.—Agricultural pursuits claim the attention of many of the citizens of the county, and wheat, oats, rye, corn, alfalfa, potatoes and every variety of garden vegetables are raised with profit, both the yield in many instances, and the quality of the product being worthy of particular mention. Wild fruits of the smaller varieties are especially abundant, and considerable progress has already been made in the cultivation of the tame varieties. The soil throughout the county is a dark, rich loam of great fertility, and the fact that crops can be raised without irrigation, facilitates agricultural pursuits.

LIVE STOCK.—In connection with agricultural pursuits, all kinds of live stock are raised extensively. The present return for assessment shows 37,464 neat cattle, 8,753 horses and 6,902 sheep, with a total valuation of \$616,378.

MINING.—Gold, silver, tin, copper, lead and manganese have been found in considerable quantities, and extensive coal fields of a good quality of semi-bituminous coal are being devel-

oped. Much of the future wealth of Crook county will undoubtedly come from the development of the coal fields of that locality. Quite extensive gold placer mining operations have been conducted on Sand creek and vicinity, with profit to the operators. Granite, porphyry, limestone, sandstone and other building stones are found in great variety and abundance.

STREAMS AND TOPOGRAPHY.—The county is traversed by numerous streams, among the number being the Belle Fourche, the Little Missouri and Little Powder rivers. The water generally of the streams is pure and suitable to domestic uses. Along these numerous streams are fertile valleys of fine farming lands, and between the streams are found extensive plateaus suitable for grazing. Low ranges of mountains, well timbered, traverse the county, adding to the attractiveness of the landscape.

TIMBER.—The timber found on these mountain ranges is a heavy growth of spruce and pine, from which can be obtained saw logs of from thirty to fifty feet in length, averaging from twelve to twenty-four inches in diameter. Several saw-mills supply the local market at reasonable prices, and citizens of the county avail themselves for building purposes, not only of the manufactured product, but also of the timber in its natural state. Oak, ash and cottonwood trees also abound.

FISHING.—A branch of the State Fish Hatchery is located in Crook county, not far from Sundance, and many of the streams of the county furnish excellent sport to those who enjoy the pursuit of game fish.

NATURAL CURIOSITIES.—One remarkable formation known as the Devil's Tower, a solid basaltic column rising abruptly to a height of 1,300 feet, and making a landmark that can be seen for miles in every direction, is a notable feature of the topography of this county.

FREMONT COUNTY.

BY C. G. COUTANT.

Fremont is the west central county of the state, and has an average width, north and south, of one hundred miles, and its length, east and west, is one hundred and twenty-five miles.

The county indebtedness is \$50,000 (bonded), and the rate of taxation for 1897 was 15.5 mills. The total number of acres of land listed for taxation in the same year was 39,678, while the valuation of all real estate, including town lots, was \$524,336.00, and the total value of all assessable property in the county, \$1,219,278.00.

There are no railroads in the county, but it is reached by daily stage from Casper on the Fremont, Elkhorn & Missouri Valley, and Rawlins, on the Union Pacific railroad.

The county is famous for its rich agricultural lands and its abundance of water for irrigation. It is also noted for fine apple orchards and its abundance of small fruits. The wool clip of the county for 1897 was 1,600,000 pounds. There are many small cattle ranches in the county, which have been operated successfully for many years. Wheat is grown in the Lander valley, and it has been a profitable crop annually for the last fifteen years. There are three improved flouring mills in the county, one located in Lander, another at Milford, four miles north of the latter place, and the third at the Shoshone agency, twelve miles north of the last named place. All these mills turn out high patent process flour, and the product is equal to the best anywhere. Oats and other small grains are successfully grown. Potatoes and all kinds of garden vegetables grow to perfection, including tomatoes, which ripen before frost. Alfalfa, timothy, yield abundantly, and native hay grasses abound everywhere.

LANDER.—The county seat, is centrally located and is surrounded by hundreds of improved farms. The court house and jail is a fine, large brick structure, and is one of the best county buildings in the state. The public school building is

of brick and contains nine large rooms. The average enrollment is two hundred and fifty, and six teachers are employed. The school is graded, and the graduates of the High school are admitted to the State University. Three religious societies have church edifices, namely, Methodist, Catholic and Episcopal.

There is an abundance of timber for building purposes and sawmills to cut up the lumber. A fine article of coal is found in inexhaustible quantities all along the valley, which provides a cheap fuel for domestic and steam purposes. There are a number of oil springs in the county, and ten miles south of Lander are three flowing oil wells, with a capacity of two hundred barrels per day each. These wells are plugged at present, awaiting the advent of a railroad. White and red sandstone, for building purposes, is found in every part of the county. Eight miles west of Lander there is a deposit of gray marble, and near it an abundant supply of granite. Both of these are susceptible of a beautiful polish.

The streams of Fremont county are numerous and of a lasting character. Big Horn, Wind river, Little Wind and the numerous branches of the Popo Agie are the fountain heads of the Missouri river. They take their rise in the Wind River range, one of the loftiest mountains of the Continental Divide.

The Shoshone reservation occupies nearly one-third of the area of the county, and it is made up of fine agricultural land, much of which will be open for settlement within a very few years. The Shoshone and Arapahoe tribes, which occupy this land, number about 900 souls to each tribe. During the last few years, they have advanced with a rapid stride toward civilization, and within the last two years 1,350 have taken their lands in severalty, and the balance will make their selection as soon as the surveys, which are now going on, are completed. The Government has, since 1873, maintained schools on the reservation, and, besides this, two religious denominations are conducting schools for the benefit of the Indians. For the year 1897, the enrollment at the Government school was two hundred and four, and for 1898 it is somewhat in excess of these figures, and about one hundred and fifteen children attend the Catholic and Episcopal schools. Education is doing much for these Indians, and its effects are noticeable in the desire for land and the opening up of many farms, which are fairly cultivated. As soon as all these Indians take their land in severaltv. they will sell to the Government what remains, and it will be thrown open to settlement.

Fish abound in all the streams of this section, and trout fishing is the pastime of the many. There is an abundance of elk, deer and antelope and a number of varieties of bear in the Wind River range and Owl Creek mountains, which extend nearly the whole length of the county.

Southern Fremont county has numerous gold deposits, both in placer and quartz. From 1868 to 1873, the mines around South Pass yielded more than \$7,000,000. Since that time there has been a steady output, but the mining districts being remote from the railroad, the work has been carried on under many disadvantages, and the amount of gold taken out has consequently been comparatively small. The mineralized district covers a territory of twenty-five miles one way by fifty-five the other. Within the last two or three years men with large means have become interested in the mines, and these feel confident that the outcome will be satisfactory.

There is a large amount of Government land in the county, suitable for stock ranches and farms. Near Lander are 12,000 acres which can be entered as homesteads or desert claims, and irrigating ditches can be constructed so as to water these lands at comparatively small expense. These are desirable locations because of their nearness to market, good schools and churches.

JOHNSON COUNTY.

Johnson county is bounded on the north by Sheridan county, on the south by Natrona, on the east by Weston and Crook, and on the west by Big Horn. It has an area of 4,046 square miles, or 2,589,600 acres. The total assessed valuation of the county in 1897 was \$1,163,745, divided as follows: Land and improvements, \$206,801; town lots and improvements, \$160,731; cattle, \$372,592; horses, \$73,934; sheep, \$108,316; other property, \$141,371. County bonded indebtedness, \$75,000. The population of the county is almost 3,000. Johnson county, with its rolling plains, extensive forests and fertile valleys, is justly regarded as one of the best sections of the state. The

Big Horn mountains have an elevation of nearly 14,000 feet, while many of the valleys are less than 5,000 feet above the sea level. The resources of the county are varied. Stock raising was the first industry to engage the attention of settlers. It was the open range, the abundant streams of pure water, and the sparse settlement that first attracted the large cattlemen to Johnson county in 1879-89. There are thousands of acres of grazing lands; but sufficient lands can be irrigated to produce enough hay, grain, alfalfa, etc., to make winter feed for all the live stock that the range will support in summer. The county is one of the best watered counties in Wyoming, being well supplied with innumerable streams heading in the Big Horn mountains, and flowing generally to the northeast and the northwest. Agriculture has become a leading industry, and only awaits increased railroad facilities to greatly increase the productions of the county. All kinds of vegetables are successfully raised; cabbage, turnips, rutabagas, lettuce, parsnips, cauliflower, beets, carrots, celery, broom corn and sorghum cane are all grown with success, while melons and small fruits of unequaled flavor and excellence, are cultivated. Yield of oats per acre is given at forty-five bushels and upwards; wheat, thirty to fifty bushels; barley, forty to sixty bushels; potatoes average two hundred bushels, and other crops in proportion.

There is a large supply of pine timber taken from the mountains, and is well suited for building purposes. Along the streams are thrifty groves of cottonwood, but experiments have shown that timber of various kinds can be as successfully grown here as in the prairie states of Kansas and Nebraska. Minerals are yet undeveloped, but valuable prospects in gold, silver and copper, are found in the Big Horn mountains. Coal of superior quality is mined in numerous localities.

Buffalo, the county seat, has always been a prosperous town, and, at the present time, has a population of about 1,200. It is the business center of a fine grazing and agricultural district, and has superior natural advantages. Clear creek could furnish water power for a hundred factories, besides irrigating several hundred thousand acres of land. At the present time, Buffalo is thirty-two miles from the Burlington & Missouri railroad, but, at no distant day, expects to have railroad connections. Its citizens have been very enterprising, in building up the town, having erected a \$40,000 court house, a \$15,000 school building and numerous brick buildings. The city also maintains an electric light plant, flouring mill, water works and two newspapers. Two stage lines are operated, one leaving daily for Sheridan and the other for Clearmont, on the line of the railroad.

LARAMIE COUNTY.

BY ROBT. C. MORRIS.

Laramie county is located in the southeastern portion of Wyoming, and comprises an area of 7,000 square miles. It ranks first in population and wealth, and was one of the original four counties of the Territory of Wyoming. The rolling plains along the eastern slope of the Black Hills range, varying in altitude from 4,000 to 8,000 feet, are its natural features. These plains are peculiarly adapted to grazing. In all parts of the county are found numerous streams. The total acreage of the county is 4,520,480, of which 3,000,000 acres are fine grazing land and 1,000,000 acres are susceptible of being made rich agricultural lands.

It is full of undeveloped resources, and has iron, coal, copper, gold and silver, sandstone, marble, granite, mineral paint, mica, etc. The land is generally free from stones and other obstructions and is easily broken and cultivated. In exceptional seasons the natural rainfall is sufficient to produce a growth of grain and vegetables, but irrigating ditches and a reliable supply of water are necessary to insure the success of farming operations.

The county indebtedness is \$400,000, and the rate of taxation 12.875 mills. The total number of acres of land listed for taxation is 1,002,685.28, and the valuation of all real estate in the county, including town lots, is \$2,808,890.64; total value of all assessable property in the county, \$5,433,052.37.

Laramie county has passed from a purely pastoral condition to one of mixed husbandry. Stock raising, farming, dairying and gardening are practiced in varying degrees. The average temperature is about 60 degrees F.; the rainfall, fourteen inches; frosts sometimes up to the middle of May, and again from the middle of September. All field crops common to the west succeed well.

The development through irrigation has not been confined to any particular locality. The ranches near the Laramie range, to-wit, on the little streams which flow southward into the Poudre of Colorado, on the Crow, Lodge Pole and Chug,

as well as on the North Laramie, Cotton and Horse Shoe, are still mainly for the production of hay; but lower down, especially on Horse creek and other little streams emptying into the North Platte near the border of Nebraska, general farming is done with excellent results. The soil is exceedingly fertile, the water reliable and the altitude sufficiently low to warrant the planting of any of the ordinary field crops. The creeks are lined, therefore, with farms in the hands of ranchmen, who, by combining farming and stock raising, are prospering.

WHEATLAND COLONY.—The Wheatland colony is located in the center of one of the finest agricultural sections to be found in the west, and what can be accomplished under an irrigation system may best be seen here. The average altitude of the lands is 4,700 feet and the water for irrigating purposes, of which there is an ample supply, is obtained from the Laramie and Sybille rivers.

The purpose or object of the company was to make it possible to locate a large body of agriculturists near Cheyenne. A half dozen public-spirited men, some years ago, caused a thorough investigation to be made. They found the section of country, which they afterwards selected for the location of the works, one of the best locations for a successful agricultural settlement. The first thing was to discover a rich soil; then a means of obtaining an abundance of water for its reclamation. The advice and assistance of the best engineers were procured, those who had not only experience in doing engineering work, but who had so watched the construction of various irrigation plants as to avoid mistakes as to plans and specifications, for the best possible systems. Every examination made of the completed works by experts and others has brought the highest commendation of the system.

There are three large canals of a total length of forty-four miles, having a capacity equal to the irrigation of 60,000 acres of land. It is proposed to extend the system so as to water 120,000 acres. Over \$500,000 was expended in the original construction of these works. The soil is a rich sandy loam, and when irrigated, is well adapted for raising wheat, oats, barley, rye, potatoes, turnips, flax, beets, certain varieties of corn, etc., without other fertilization than comes from the application of water for irrigation.

One of the crops which promises to bring money to the Wheatland farmer is the sugar beet. The amount of saccharine matter in most sugar beets ranges from 12 to 16 per cent, but the Wheatland beets, according to the official reports of



FOURTEEN HENDERSON'S CRIMSON CLUSTER STRAWBERRIES. - Laramie County.

the Government chemist, showed 22 per cent of saccharine matter.

The town of Wheatland is located on the Denver & Gulf railroad, about ninety miles from Cheyenne. It is beautifully located, beneath the shadow of Laramie Peak, and is a prosperous community. It is most advantageously situated for the growth of a large city. It is 4,700 feet above sea level. There are at present 150 comfortable houses in the town, a flour mill, elevator, several stores and a good hotel. The elevator has a capacity of 60,000 bushels of grain, and a storage room for 30,000 bushels of potatoes. It is provided with the most improved machinery for handling grain and farm products. The Wheatland Roller mill, completed in September, 1897, at a cost of \$25,000, has a capacity of one hundred and fifty barrels of flour per day, and during the busy season is operated both night and day. The machinery is all of the latest and most improved pattern, and its product equal to the best manufactured in the west. All the wheat is obtained from the colony.

COUNTY SEAT AND PRINCIPAL TOWN—CHEYENNE.—The city of Cheyenne is the county seat of Laramie county, and has a population of 10,000. It is the commercial center of the state and headquarters of the great cattle ranges of the west. Owing to the rapid advancement of Cheyenne after the settlement in 1867, it gained the title of "The Magic City," and has always been noted for the wealth and enterprise of its citizens. The city was designated as the capital when Wyoming territory was organized in 1869. Its geographical position is at the very gateway of the state, its location being forty miles from the west line of Nebraska and twelve from the north line of Colorado.

It is 516 miles west of Omaha, on the line of the Union Pacific; also, the junction of the Denver Pacific, Colorado Central and Cheyenne & Northern railways. The completion, in December, 1887, of the Cheyenne & Burlington with the Burlington & Missouri system, gave Cheyenne another important outlet.

Cheyenne has an extensive system of water works, the latest and most approved sewerage system, fire department and fire alarm system, telephone exchange, arc and incandescent electric-lighted streets, besides gas for general use; has a \$50,000 opera house, \$30,000 club house, fine business blocks, elegant private residences, two banks, eleven churches, two daily newspapers, state capitol costing \$350,000. Among

the other institutions are five public school buildings, built at an average cost of \$30,000; a convent school, erected at a cost of over \$50,000; a county hospital; a county court house and jail; a State Sailors' and Soldiers' Home, and extensive railroad shops, employing several hundred men.

The city is the supply point for an immense stock raising and agricultural country, and its citizens are among the largest live stock owners in the state.

Fort Russell, three miles from the city, is a permanent military post, and the largest and most important in the department of the Platte.

There are several manufacturing establishments in the city, and the volume of business transacted annually amounts to many thousand dollars.

Strangers view with delight the miles of smooth stone flagging and cement sidewalks that line almost every street of Cheyenne. The beauty of many of the streets and avenues is greatly enhanced by the bright, green turf on either side of the walk, which, together with long, straight lines of trees, forms an agreeable feature of the city's landscape. Nowhere can be found more delightful drives. Nature has provided roads equal to the smooth gravel roads of Central Park, New York. The people of Cheyenne have made it one of the most attractive places in which to live in America.

Cheyenne now has the promise of another splendid edifice in the new United States building about to be erected. The building, which is to be devoted to the use of the postal department, United States courts, land offices, weather bureau, etc., will be a most imposing edifice and an ornament to the business section of the city. Its construction will soon be commenced, as the first appropriation of \$200,000 has already been made by congress. The total cost of the building will approximate \$500,000.

One of the greatest attractions of the city is its pure and healthful climate. Its air is an invigorating tonic, cool in summer, mild in winter. No better summer climate can be found in our land.

HARTVILLE.—Hartville, the iron camp, is situated about one hundred miles north of Cheyenne. The ore is hauled fifteen miles from the mines to Badger by wagon, thence over the Gulf and Union Pacific roads to Denver, and the output is about one hundred and fifty tons per day.



WYOMING CATTLE.

NATRONA COUNTY.

BY HON. M. P. WHEELER.

This county was organized in 1890, and derives its name from the natural deposits of natrum, or carbonite of soda, found in the numerous basins or lakes that abound in this section of Wyoming. Located in almost the geographical center of the state, it covers an area of about seventy square miles. The Platte river, with its numerous tributaries, traversing its entire length a distance of seventy-five miles from east to west, furnishes an abundant water supply for irrigation, and as the mean elevation does not exceed 5,500 feet, the farmers of the county raise all the hardy grains, vegetables and fruit common to the northwestern states.

At the present time the live stock interest leads all other industries in this county. The Fremont, Elkhorn & Missouri railroad, a branch of the great Northwestern system, affords an outlet to eastern markets. The assessed wealth of Natrona county in 1897 was \$1,062,078, and is divided as follows: Sheep, \$382,604; cattle, \$139,954; horses, \$46,597; lands and improvements, \$134,028; railroad property, \$58,344; merchandise and manufacturing, \$82,110; all other property, \$300,000. The county indebtedness is \$22,000, and the rate of taxation for the year 1897 was 14 mills.

It will be observed that the raising of sheep overshadows all other industries. The fleece of a Natrona county sheep will average ten pounds, and the total wool clip for 1898 approximates four million pounds.

But it is the undeveloped resources of Natrona county that offer the greatest inducements for the investment of capital. Already the oil industry has reached an important stage of development. The oil district, which covers an area of 2,000 square miles, has been largely prospected and numerous wells have been drilled and yield an unlimited supply of natural oils. About 700,000 acres of oil lands have been located in Natrona county. The oil is lubricant in character, and is said by

experts to be the best in the world. The principal basin is on Salt creek. Wells have also been drilled on the south fork of Powder river, in the Rattlesnake district, and on Casper creek. In every district the finest of lubricating oil has been found. Much doubt exists relative to the first discovery of oil in Wyoming. It is said that the Mormons and other overland travelers used oil over forty years ago from a spring at Oil mountain, twenty miles west of the town of Casper. It is claimed that there are over fifty such springs in the county. One of the first locators of oil in Natrona county was John Merritt, who became the possessor of several thousand acres of land lying along the west bank of Salt creek, on which was a natural oil spring. The first oil well sunk was in 1884, on Poison Spider creek, by a Denver company. Wells were also sunk in the Rattlesnake district. But the principal wells are located on Salt creek, a distance of fifty miles from Casper. At Casper, the Pennsylvania Oil and Gas company have erected a refinery, which has a daily capacity of two hundred barrels of crude oil. The product is hauled from the wells in wagons that have a carrying capacity of 18,000 pounds, each train of wagons requiring twelve to sixteen mules. This greatly adds to the expense of production. At present the following oils are manufactured at Casper: Railroad engine, railroad car, railroad valve and railroad signal. These oils are the most perfect lubricants, of high endurance, highest fire tests and greatest body and wearing power. Besides railroad oils, the refinery manufactures other special high grade oils, viz: Stationary engine, valve, spindle oils, dynamo oil, neutral oil for blending animal and vegetable oils, paint oil, visco axle grease, and heavy machine oil for mowing machines. The product of eight producing wells varies in value from twenty cents to one dollar and fifty cents per gallon.

Steam coal exists in abundance in Natrona county. Glenrock, a few miles east of Casper, in Converse county, is a thriving coal camp, and gives employment to several hundred people. Lignite coal, varying from a few inches to several feet in thickness, is found in various parts of the county. The inexhaustible deposits of sulphate and carbonate of soda, which are formed from natural springs, will some day be the basis of a great and profitable industry, and only await the magic touch of capital and skill to develop their great possibilities.

Among the natural wonders of Natrona county are the Alcova Hot Springs, which possess medicinal virtues for the treatment of rheumatism and kindred diseases. These springs



THE FIRST OIL REFINERY LOCATED IN WYOMING.

are located in the mountains and are surrounded with beautiful scenery.

Considerable development has been made in the mining of precious metals. Deposits of gold and silver ore are found in the mountains. Low grade ores, which assay from five to ten dollars a ton, are abundant, and in time can be profitably mined. Coal, iron, copper and valuable building stone are found in various localities. The best developed copper claims in Casper mountain assay from 37 to 40 per cent copper. Asbestos is also found in paying quantities.

CASPER, the county seat of Natrona county, is a thriving town of about 1,200 inhabitants. At the present time it is one of the most thriving communities in the state. It is the western terminus of the Fremont, Elkhorn & Missouri Valley railroad, which gives it a large and important freighting business and trade with the country west of Casper, including the prosperous counties of Fremont and Big Horn. Its citizens are among the most enterprising in the state, and its fine business blocks, churches and school houses attest the liberality of the people. Among the recent improvements are fine water works, electric lights and steam plant for shearing sheep.

SHERIDAN COUNTY.

BY HON. EDWARD GILLETTE,
Superintendent Water Division No. 2.

Sheridan county is situated in the central part of northern Wyoming. In extent it is ninety miles east and west, and thirty miles north and south, containing 2,700 square miles, or 1,728,000 acres. This area is divided as follows: Three hundred and seventy-eight thousand acres, mountainous; 350,000 acres irrigated or capable of irrigation; 1,000,000 acres grazing lands. There are approximately 200,000 acres under cultivation at present.

The principal products of the county are cattle, hay, wheat, oats, potatoes and coal. Farming, in connection with stock raising, is the chief occupation of the people, the cattle industry being by far the most prevalent and best paying business.

The assessed wealth of Sheridan county in 1897 was divided as follows: Sheep, \$12,052.25; cattle, \$310,439; horses, \$101,403; lands and improvements, \$510,142.60; railroad property, \$350,787.36; merchandise and manufactures, \$137,941; total assessed value of all property, \$1,924,433.41; the county's indebtedness is \$32,000, and the rate of taxation for the year 1897 was 16 mills. Of the total county area, 165,000 acres have been patented.

The annual output of coal is 75,000 tons, the greater part of which is shipped to the Black Hills and points in Nebraska.

Of wheat, 200,000 bushels are raised each year, the acreage being on the increase, but by far the largest acreage in crops is given to the raising of hay, which consists mainly of alfalfa. This is naturally the case where the most lucrative business in the past has been, and is now, that of stock raising. It is distinctively notable, however, that as farmers come into this country from eastern states, the farm is made to produce greater profit in the raising of grains, potatoes and small fruits, which are now being shipped to markets both east and west, and for which there is a greater demand than supply.

The mountainous part of Sheridan county shows more prospects of being rich in copper than in other minerals, although good samples of gold, silver, nickel and other minerals are found. The mountainous part of the county, however, contains a large number of natural basins for the storage of water, which insures a vast development at no distant time in the production of crops requiring late irrigation. The building of reservoirs for the storage of water has hardly begun, but considerable interest is being taken in this direction, and some work has already been contracted.

It would appear that with the most productive kind of soil, with abundance of water, the prospects in the mountains being developed into mines, while the whole country is underlaid with coal, exceedingly easy of access, Sheridan county happily combines those resources essential as a foundation to make a permanent and rapid development on a sound basis, insuring happy and prosperous homes for those willing to work.

One of the pleasing features of Sheridan county is the excellent trout fishing to be found in all of the twenty-two streams flowing from the Big Horn mountains. This indi-

cates at once the pure and cool character of the waters in this county. These streams were found in early days to be the natural home of the black spotted or Rocky Mountain trout. Of late years most of the streams have been stocked with the red spotted or eastern brook trout, which, from actual tests made, appear to do better in these waters than any other region yet found.

The Big Horn mountains, unlike the Rocky mountains farther west, afford the finest places for camping purposes. Summer resorts have been erected at some of the lakes high up in the mountains, where the fishing is the best, and here one can walk over great drifts of snow, which never entirely disappear.

The Burlington & Missouri River railroad has a line traversing the entire length of the county, and has projected lines in other directions. The voting population is 2,000; there are ten churches; a college; numerous excellent schools; three flouring mills; brick yards; a brewery, and a number of small manufacturing concerns.

At Sheridan, the county seat, an excellent electric light plant is in operation, and a system of telephone exchange exists connecting with the smaller towns in the vicinity.

There is practically no waste land in the county. The mountain section is covered partly with pine timber, furnishing an abundant supply of building material, and poles for fencing, besides large areas of good grazing lands for summer pasture. Of the million acres of grazing lands in the rolling country east of the mountains, 200,000 acres have been leased to the settlers. The principle governing the allotment of these grazing lands by the state has been to allow each settler the sole right to lease the land adjacent to his farm. The hills between the valleys and upper bench lands are covered with a thick growth of nutritious grasses, which produce the best range stock in this country.

Opportunities for securing good homes and a prosperous business are abundant, where the climate is all that can be desired, and the cost of living is reduced to a minimum.

(See also data concerning Sheridan county in other portion of this volume.)

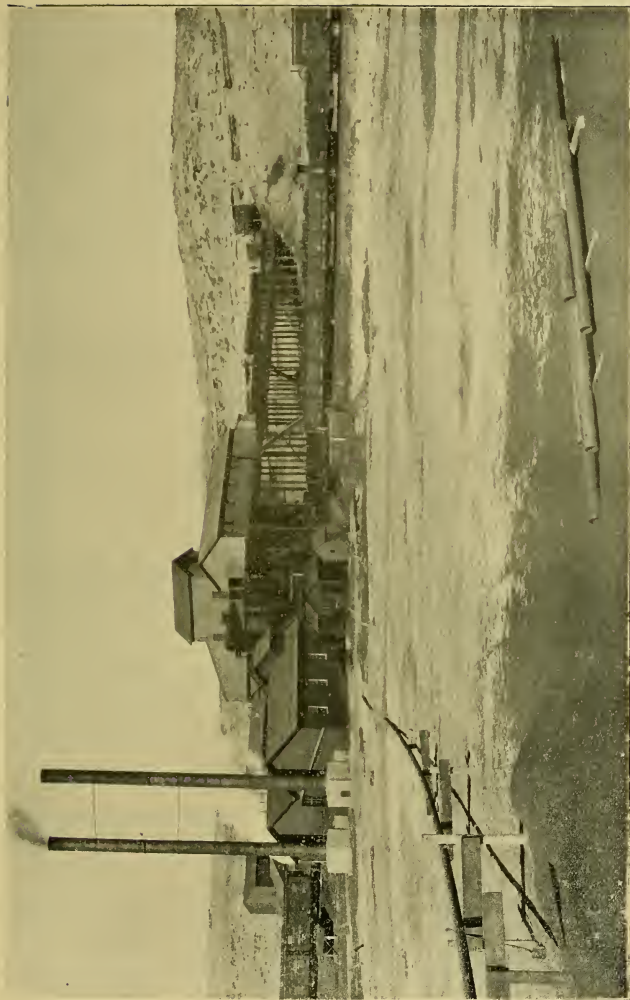
SWEETWATER COUNTY.

Sweetwater county is bounded on the north by Fremont county, on the south by Utah and Colorado, on the east by Carbon county, and on the west by Uinta county. In area it is one of the largest counties in the state, and its principal industries are coal mining and live stock.

In the year 1897 the total assessed value of property in the county was \$3,590,106, divided as follows: Railroad property, \$1,463,258.26; lands and improvements, including town lots, \$1,372,871; cattle, \$26,757; horses, \$21,890, and sheep, \$325,608; the total bonded indebtedness of the county is \$93,000, and the rate of taxation for the year 1897 was 12.75 mills.

COUNTY SEAT AND PRINCIPAL TOWNS.—The county seat is located at the town of Green River, at the junction of the Union Pacific railroad with the Green river. At this point are located the county buildings, and the town is maintained by the trade derived from the settlements above and below along the Green river, and by the business from the railroad traffic. It is a divisional point on the railroad, and the railroad company maintains repair shops there. It is well lighted by electricity; has a good water system, and the municipal government is supported without taxation other than license taxes. A saw mill, a steam shearing plant, and the plant of the Green River Fuel and Oil company are among the notable business features of this place.

ROCK SPRINGS.—Eighteen miles east, on the line of the Union Pacific, is located the town of Rock Springs, where there are operated the largest coal mines in the state. This town has a population of approximately 4,500, composed very largely of miners, and is one of the most active business points in Wyoming. It is well constructed, having fine business blocks, a water system extending to the Green river, electric light plant, and a magnificent city hall. At this point is located the Wyoming General Hospital, an institution of modern equipment maintained by the state for the benefit of its citizens.



COAL MINE NO. 9, ROCK SPRINGS.

INDUSTRIES.—Sweetwater county is well suited to the business of raising sheep, and many citizens of the county are engaged in that industry. The broken and diversified character of the country, covered as it is with white sage and nutritious grasses, furnishes just the conditions conducive to the successful management of that class of live stock.

Next in importance to the sheep business is the coal industry. Probably the entire county is underlaid with veins of coal, which, however, have been more extensively developed at Rock Springs than elsewhere, and the term Rock Springs coal is synonymous throughout the west with coal of exceptional quality.

The following report of shipments made by the Union Pacific railroad between the years 1890 to 1896, will furnish some idea of the extent of the industry:

	Shipped—Cars.	Tons.
1890.....	49,549	990,980
1891.....	58,323	1,166,460
1892.....	66,028	1,320,560
1893.....	68,043	1,496,946
1894.....	64,303	1,414,666
1895.....	57,190	1,258,180
1896.....	52,421	1,153,262

The Union Pacific Coal company is the largest operator in the coal field, although there are others located at or near Rock Springs. This company owns nine mines, but at present is operating but a portion of that number. In addition to obtaining a full supply of fuel for its own use, the company annually sells thousands of tons throughout Wyoming and adjacent states.

TIMBER.—On the mountains along Green river, extending into Fremont and Uinta counties, are found large areas of heavily timbered lands, from which there is cut annually a large amount of a good quality of pine timber, which is floated down the Green river to the city of Green River, where it is prepared for market.

AGRICULTURE.—While this county is well watered by streams of considerable size, the agricultural development has not been as extensive as in other counties, although in certain localities are found attractive and well-improved ranches.

SODA.—At Green River a remarkably pure quality of crude soda has been found, of which the following analysis has been furnished by Prof. C. Gilbert Wheeler of Chicago, a chemist of acknowledged ability:

Silica	0.51 per cent
Iron and Aluminum	0.42 per cent
Calcium	0.64 per cent
Magnesium.....	0.27 per cent
Insoluble residue	1.23 per cent
Water	22.57 per cent
Anhydrous Carb. Soda.	75.36 per cent

This is practically more pure than the sal soda of commerce, and the cheapness with which it can be produced offers great inducement for the investment of capital.

UINTA COUNTY.

BY GEORGE S. MARX.

This county lies in the extreme western portion of the state, in the shape of a parallelogram, and extends from the northern border of Utah to the southern boundary of the far-famed Yellowstone National Park. It is bounded on the east by the counties of Sweetwater and Fremont, and on the west by Utah and Idaho. It covers over 15,000 square miles, and equals in area the old states of Massachusetts, Connecticut and Delaware combined, and much of this vast acreage is unentered Government land. The Union Pacific railroad crosses the county in its southern portion, and the Oregon Short Line in the south central portion. Elevation ranges from 5,000 to 8,000 feet.

TOPOGRAPHY—Of the county is characterized by a charming alternation of wooded hill and arable valley, of rolling upland, pasturage and well drained meadow. Some parts of the county are very mountainous, but broad extents of valleys and plateaus blend with the hills in charming and picturesque beauty. The mountains are cut by a number of swift running rivers through deep canyons, and the valleys are threaded by the numerous forks and tributaries of these rivers. Fair lakes are embosomed in the hills and feed some great rivers and streams, and the water supply of Uinta county is never poor.

WATER COURSES.—The rivers of the county are the Bear, Green, Salt and Snake. The principal tributaries of Bear river are Black's Fork, Twin creeks and Smith's Fork. Those of the Green are Horse creek, Cottonwood, the three Piney creeks, La Barge creek, Fontenelle creek and Henry's Fork. Those of the Snake are Buffalo Fork, Gros Ventre and Hoback's rivers from the eastward, and John Davis and Salt rivers from the south. Besides the lakes and rivers, there are about forty named creeks of considerable size traversing the surface of the county.

STATISTICS.—Lands assessed, \$849,666.14; total assessed valuation of all property, \$3,504,701.60; rate of taxation, state and county, 20.65 mills. County debt, \$103,500 (bonded); number of miles of railroad, 176.95, assessed at \$1,348,571.80; number of schools, thirty-nine; teachers, fifty-four; districts, fifteen; school children between five and seventeen years, 2,215. Population, census of 1890, 7,881.

COUNTY SEAT AND PRINCIPAL TOWNS.—The county seat is Evanston; population, 1,995. It is pleasantly situated in the Bear River valley; has many natural advantages and is one of the most prosperous and attractive towns in the state. It is the home of prosperous merchants, cattlemen and sheepmen; Union Pacific shops are located here. The town has two banks, three newspapers, five churches, commodious brick school house, large brick court house and jail, electric light plant, waterworks and three hotels. The State Insane asylum is situated here, and also United States Land Office for Evanston district.

ALMY.—About five miles west, has nearly as large a population as Evanston, and is the largest coal mining camp in the county.

HILLIARD, PIEDMONT, ASPEN and CARTER are stations on the line of the Union Pacific.

FOSSIL, OPAL, HAM'S FORK, DIAMONDVILLE and KEMMERER are the principal towns on the Oregon Short Line.

FORT BRIDGER, FONTENELLE, LA BARGE and BIG PINEY, all postoffices, are agricultural and cattle-raising districts.

STAR VALLEY, 125 miles from the county seat, is traversed by Salt river, Cottonwood creek, mountain streams, and numerous large canals and laterals. The settlements are Afton, Auburn, Fairview, Thayne and Freedom, all postoffices. The

population, in the aggregate, is about 2,300. The people are thrifty and prosperous. Raise timothy and alfalfa, hay, oats, barley and winter wheat, large crops of potatoes and garden truck, and in agricultural wealth and splendid ranges for cattle, are the rivals of the people of the southern end.

The famous Jackson's Hole and Jackson's lake lie at the northern part of the county, south of the Yellowstone National Park. It is an extensive valley of fertile lands and some good farms, and is traversed by Snake river and numerous creeks.

SOIL.—The soil is of three distinct classes: First, the the bottom or meadow lands, usually possessing a rich, black and somewhat heavy soil, lying next to the streams, always easily irrigated and on that account generally the most desirable to settlers. Second, the bench lands, rising terrace-like toward the neighboring hills, possessing, as a soil, a warm sandy loam, always easily drained, usually presenting no great obstacle to irrigation, and now being generally recognized as the soil capable of the widest range of production. Third, the high bluff lands watered by mountain streams, usually too sandy for cultivation, but naturally affording the most ample and nutritious pasturage for horses, cattle and sheep.

CLIMATE.—The climate of the county, as of the state, is controlled by altitude. The winters are not severe, and the summers are always temperate. Clear, frosty days, with an occasional exceptionally cold night; usually severe weather in March; some very warm days in summer, but it never fails to bring coolness and reviving breezes in the night. The sunshine of the county, as of the state, is remarkable not only for its brilliancy but for its persistency, cloudy days being in this section much the exception.

IRRIGATION.—In all of the populated valleys of the county, canals and ditches thread the surface in every direction. No farmer depends upon the rainfall, but contemplates his crops always with a degree of certainty so far as moisture is concerned.

HORTICULTURE.—The short duration of our warm weather makes horticulture a matter of little interest here.

AGRICULTURE.—The production of timothy and wild hay, alfalfa, oats, barley in some sections, and winter wheat and potatoes, occupy the sole attention of our farmers. Possessing a soil singularly fertile and lasting, Uinta county offers unexceptional inducements to the agriculturist, with the assurance that the waters will never fail; that his crops will never

be blighted by drouth, and that abundant harvest will surely follow seed time.

TIMBER.—Throughout the county timber is abundant on the hill sides for lumber, fuel and mining purposes. Yellow and white pine, some cedar and spruce, cottonwood and aspen are the principal growths. Saw-mills are in operation in many portions of the county, and much lumber is produced.

MINING.—On the banks of the Snake and Gros Ventre rivers, placer mining has been carried on with indifferent results. In this end of the county no developed properties now exist, outside of extensive coal mines. The supply of coal in the county is practically inexhaustible. Other minerals have been found, but are undeveloped.

WESTON COUNTY.

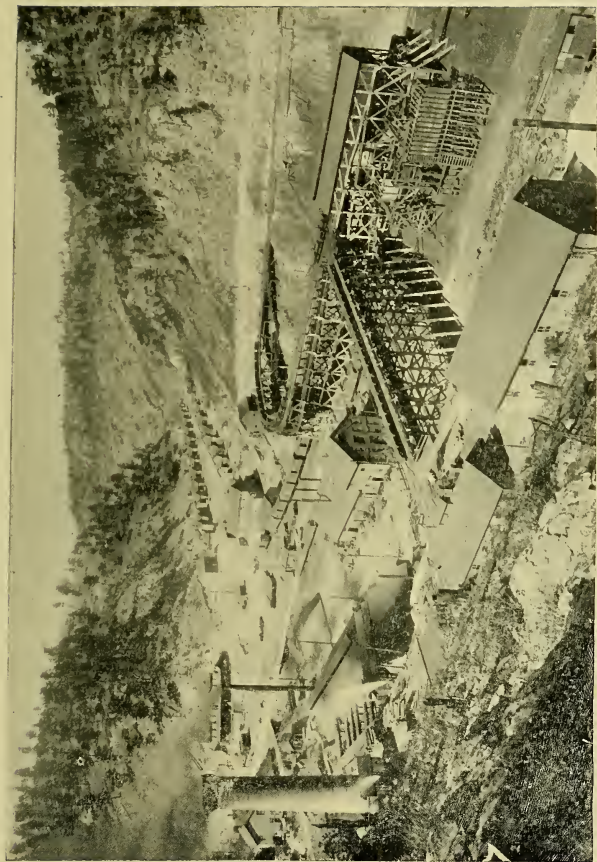
Weston county, organized May 14, 1890, is one hundred miles long by forty-eight miles wide, comprising 3,133,440 acres. It is bounded on the north by Crook county, on the south by Converse county, on the west by Johnson county and on the east by the state line of South Dakota. The county has a population of about 3,200. The total assessed valuation of all kinds of property, in 1897, was \$1,174,203, divided as follows: Railroads and telegraph lines, \$268,417; farm lands and improvements, \$192,867; town lots and improvements, \$105,625; cattle, \$437,118; horses, \$37,743; sheep, \$26,696; all other property, \$105,737. County indebtedness, \$39,800 (bonded).

Weston county, although enjoying an altitude between four and five thousand feet above the sea level, and possessing good soils, is not so well watered as other sections of the state, owing to the absence of large streams, having their sources in the lofty mountains of the snowy ranges. The rainfall, however, is considerably greater than at a higher altitude, averaging from eighteen to twenty inches per annum. The dark

loamy soils, in parts of the county, are quite productive without irrigation, and the reddish gypsum soils, found at the base of table lands, retain the moisture and are very fertile. The chief precipitation is in the spring and early summer, and crops make rapid progress from germination to maturity. Very little irrigating is done in the county, the most of the land, in the valleys, being adapted to agriculture without the artificial application of water. Wild fruits of the smaller varieties, such as plums, gooseberries, currants, strawberries, etc., grow plentifully. All the farm products known in the northern latitudes are produced in this region, even Indian corn, and the yield, if at all favorable, is most excellent. Wheat of the spring varieties, such as Fife, Oregon and Niagara, often yield over fifty bushels; rye over forty, oats seventy to even one hundred bushels, and corn of the Flint, Dent, Squaw and other varieties, also make good returns. Timothy, alfalfa, red clover and other tame grasses are cultivated with success, as are also potatoes, rutabagas, turnips, carrots and sugar beets, the last named producing as high as six tons per acre, with 20 per cent of sugar, as shown by analysis. Of the region around Newcastle, the county seat, it is said, that not over one-tenth of the arable land is under cultivation. Stock growing makes an excellent accompaniment of farming throughout this region. Short-horns, Hereford, Sussex and West Highlands find favor for the range; the Shorthorn, Ayreshire and Holstein for the dairy. Horses also receive much attention and are increasing in importance.

There is good pine timber in the Black Hills, and numerous saw-mills supply the wants of the settler. Gypsum is found in inexhaustible quantities, and superior building stones, including granite, lime, etc.. Salt-producing springs have been discovered near Jenny's Stockade, and an oil district, in the same locality, covers over four hundred square miles. Weston county is famous for its coal, which finds a ready market in the adjoining states of South Dakota and Nebraska, and along the line of the Burlington railroad, which traverses the entire length of the county, east and west.

NEWCASTLE, the county seat, is a thriving town. The first building was erected in September, 1889, the Burlington railroad having reached that point the previous month. After the discovery of coal, the population grew very rapidly, and, at the present time, is about 1,000. In 1890, extensive water-works were constructed at a cost of over \$100,000 by the Cambria Mining company, which furnishes an abundant supply of



CAMBRIA COAL M'NES.

water for Cambria, Newcastle and the great coal mines; a \$6,000 town hall was built, and later a \$12,000 school building was erected. Within the immediate vicinity are several oil wells, the first discovery being made fifteen years ago. All lines of business are well represented and prosperous.

CAMBRIA is a coal mining town, the population being actively engaged in that industry. The quality of coal mined is excellent, and is elsewhere described in this publication. Modern equipment and methods are the characteristics of the mining plant.

AGRICULTURAL DEVELOPMENT.

BY HON. ELWOOD MEAD,
State Engineer.

In describing the agriculture of this state, many interesting facts will have to be left out. Details cannot be given, only general statements. The diversity of climates and conditions is so great that to discuss the peculiar features of each agricultural district would take more pages than are at my disposal. In some ways this limit will make this description incomplete. No general statement will fit all sections of the state. In the Wheatland colony grain is the principal product. In Jackson's Hole there is no grain; cattle are the farmers' mainstay. Lander farmers, one hundred and fifty miles from a railroad, must pursue different methods from those near Douglas, with two railway connections with the outside world. There is a wider difference in climate between the Laramie plains, with their elevation of 7,000 feet above sea level, and the lands around Sheridan at half that elevation, than there is

between Sheridan and Salt Lake. Many settlements are isolated and have developed local peculiarities, both in methods and ideas. Thus Star Valley is a region of small farms. There are more 160-acre tracts than of larger areas. On Clear creek the reverse is true. One ranch extends along the stream fifteen miles. The districts settled by range cattle or sheepmen do not resemble the districts settled by small farmers from Utah, either in appearance or the views of the land owners. All I can hope to do, and all that will be attempted, is to explain to those interested in the state, and those looking for homes, how large is the opportunity here presented, and how great a range there is for individual chance.

FARMING, THE STATE'S MOST STABLE INDUSTRY.

My first work as State Engineer was to meet the farmers and learn what kind of ditches had been built, and how they were being used. To do this, I spent the entire summer of 1888 traveling over the state in a wagon. After a journey of over a thousand miles, and after looking at irrigated land in more than half the counties of the state, and talking water rights with farmers until I dreamed about them, I sat down one night in Sheridan with my companion and went over the situation. It was discouraging. While, so far as I could see, the land, water and climate were just as good as it was in Colorado or Utah, there was a difference in conditions and sentiment that seemed to make the future full of doubt.

More than half the land owners talked with, pinned their faith to the open range. Irrigation was a side issue. Farming alone, we were told over and over again, would not pay. And the way much of the land examined was being farmed, it could not pay. Men owning six hundred acres would have sixty under cultivation. Too many men did their irrigation on horseback.

Among the small farmers, about nine out of ten were in debt. Interest rates were from 12 to 24 per cent. Most of the farms had recently been filed on. A large outlay was needed for fencing, grading and buildings. Many homes were mortgaged to pay land office charges. So many farmers were



FIELD PRODUCTS, WYOMING.

discouraged, that if I had wanted to be a land-grabber, I could have secured thousands of acres by simply assuming the mortgages. It seemed as though the money lender was in a fair way to take the state. The high rates of interest seemed to me to have no other outcome.

The ten years which have intervened have shown that farming is one of the state's most solid and best paying industries. None others have kept pace with it in growth, and no class of citizens have as much to show for their ten years' labor. The men with mortgaged homes and burdened with the oppressive drain of 2 per cent a month have nearly all not only cleared this off, but have a bank account of their own. Land values are beginning to rise. New homes are being built; more land is being reclaimed, and there has been an entire change in sentiment about the possibilities of Wyoming's agriculture.

Anyone who will compare the valleys of Box Elder, La Puelle and La Bonte creeks, in Converse county, as they were ten years ago with what they are today, can form some idea as to whether farming pays.

Then Wheatland was a town of one house. Sheridan was a collection of board shanties. Star Valley was an experiment one year old.

There are two reasons for the unusual success of Wyoming farmers. The first is large area of free public land and a limited area of cheap state land on which to pasture herds of cattle or flocks of sheep. The best results have been had from uniting farming and stock raising. The old idea that the range was the thing was largely true, but this is now giving way to the more humane and safer plan of uniting the grazing and irrigated lands. The second is the high price of farm products. Wyoming still has to import large quantities of hay and grain, and practically all the fruit consumed in the state. There are few sections where the supply of any staple crop equals the demand, hence, prices are higher than in many of the large seaboard cities.

The following table gives prices in a number of towns in the leading agricultural sections on May 1, 1898:

NAME OF ARTICLES.	CITY OR TOWN.										
	Chey- enne.	Rawlins.	Saratoga.	Evans, ton.	Douglas.	Lusk.	Casper.	Lander.	Sheri- dan.	Jackson.	Basin.
Butter per pound	\$.15	\$.20	\$.25	\$.20	\$.20	\$.20	\$.20	\$.25	\$.20 to .25	\$.20	\$.25 to .30
Eggs per dozen. ....	.12½	.12	.25	15	.12½	.10	.15	.20	.10	.20	.15 to .20
Chickens per dozen	3.00 to 3.50		3.00 to 3.50	3.50	4.00	3.00	5.00	5.00	3.50	3.50	6.00
Potatoes per hundred pounds.	1.00	1.25	1.00	1.25	1.00	.85	1.50	1.50	.75	1.00	1.50
Oats per hundred pounds	1.40	1.30	1.50	1.25	1.25	1.00	1.25	2.50	1.00		1.75
Wheat per hundred pounds.	1.50	1.75	1.25	1.50	1.40	1.10	2.00	1.50	1.25		2.00
Alfalfa hay per ton	8.00	8.00	5.00	8.00	6.00		10.00	8.00	5.00		5.00
Native hay per ton	9.00	11.00	4.00 to 6.00	7.00	10.00	7.00	12.00	10.00	7.00	4.00	7.00
Sheep per head	5.00	3.00	4.50	4.50	5.00	3.50	5.00	4.00	3.25		2.50 to 3.00
Steers per head 1 year old	20.00	22.50	18.00	17.00	18.00	25.00	25.00	20.00	26.00	15.00 to 18.00	18.00
Steers per head 2 years old	25.00	27.50	22.50	22.50	25.00	33.00	30.00	30.00	35.00	25.00 to 28.00	24.00
Steers per head 3 years old	35.00	35.00	32.50 to 35.00	30.00 to 35.00	40.00	40.00	40.00	40.00	44.00	35.00	36.00

These prices are higher than the average of the past ten years; those of live stock much higher, but there has not been a time in that period when a ton of hay or five hundred pounds of oats would not pay for an acre of irrigated land which would each year produce two tons of the first or a thousand pounds of the second.

OPPORTUNITIES FOR SETTLERS AND HOME-SEEKERS.

Land in Wyoming must be irrigated to raise profitable crops. The exceptions to this statement are too limited to be worth considering. Settlers can do nothing towards making homes on the fifty million acres of non-irrigable lands. Of the irrigable land only about 10 per cent is now being cultivated. More than this is under ditches, but the greater part is still vacant public land.

There are still a few places where small, cheap ditches can be built, but they are in remote localities and usually at high elevations where production is limited. On the head of Green river are large tracts of easily irrigated land, but there are frosts every month in the year, and hay is the only crop which can be depended on. The same situation exists along the headwaters of Snake, Wind and Sweetwater rivers. Here, although cheap ditches are possible, the land is worth but little after they are built. I know of no section of the state having an altitude of 6,000 feet or less where public land, which can be cheaply watered, is open to settlement, and letters received at the State Engineer's office from all over the state make the same statement. Those looking for homes are not, however, restricted to public land. Land already patented and reclaimed can be bought for less than the improvements on it cost. Farming lands are the cheapest property in Wyoming, and they are cheaper than in any of the surrounding states. As a result, an irrigated farm can be bought outright much cheaper than it can be created. In order to ascertain what are the opportunities in different sections of the state, a letter of inquiry was addressed to some responsible citizen in each county. Replies

were not received from all, but from those which came, the following selections have been made:

Edward Gillette, member of the State Board of Control, writes from Sheridan county:

This county combines in an exceedingly favorable manner crop raising and stock raising. The range grasses here are considered by stockmen to be unexcelled, an evidence of this is in the fact that range beef from this county usually receives the highest price for that class of beef in the Chicago market. Referring to the crops, they also receive the highest awards, both for quality and quantity.

The price of land here at present is low; good land, with fair water rights, can be had at ten dollars per acre. Farmers and stockmen who are well established in their business will not sell for twenty-five dollars per acre, and do not care, as a rule, to entertain any proposition to sell.

It would appear from the earning power of the land that its worth should be from forty to fifty dollars per acre, and I have no doubt but that such will be the case in a few years.

In a new country like this some farmers, or so-called, at least, are always found who will sell out, not knowing when they have a good thing, and naturally more inclined to wander about than to settle down to real work.

The lower bottom land along the streams is practically all settled at present. Nothing, as yet, worth mentioning has been done toward reclamation of the upper bench lands. These lands, however, will, no doubt, make our best farms in the future. We have not reached that stage in our development where water is stored in the natural sites for reservoirs along our mountain streams. Judging from the success of reservoirs in Colorado, we are on the eve of a great development along that line in this country, where freight rates to Chicago are the same as from Colorado points. Fuel is abundant and cheap, being delivered at Sheridan in car-load lots at one dollar per ton. The favorite method of farmers in this locality is to lease from the state large pastures of good grazing land in connection with their irrigated lands; this insures a good business in raising stock as well as crops. Cattle raising is the most prosperous business, and probably will be so for a long time to come, owing to the vast ranges of fine grazing lands in this section of country. When our agricultural lands are increased

two-fold by means of reservoirs in the mountains, the percentage of farm lands will be exceedingly small as compared with the vast acreage of land covered with nutritious grasses, and which seems specially made for extensive stock purposes. The farmers who lease grazing lands from the state at a few cents per acre per year, take great care to preserve and increase the growth of grasses thereon and thereby insure for themselves a safe, sure and exceedingly profitable business for all time to come. The average elevation of farm lands in this county is a little under 4,000 feet above sea level, Sheridan, the county seat, being 3,720. The Big Horn mountains and valleys which compose this county are similar to the Wasatch mountains and rich valleys of Utah, while the rolling country between the valleys is covered thickly with the finest growth of grasses, while in Utah sage brush and a comparative barren country exists.

The climate here is good; the chinook, or warm winds from the Pacific ocean, keep the range open during the winter, the streams abound in trout, and insure a supply of pure and cool water for domestic purposes. Mining prospects in the adjacent mountains indicate that before long the mining of copper, gold, silver and nickel will be extensively prosecuted. As a rule, the best farmers appear to be those who pay most for their farms, and the farms costing the most produce the best incomes. This need not deter the good farmer, without means, from coming to this country, for in two years' time he can pay for a good farm here, on the present low price for land, off from the crops raised.

It is my belief that in a very few years farm lands in this section will be worth two or three times what they are at present: this is a sure thing, if there is anything in the fact that the value of property is based upon what income it will produce.

The supply of water here is good and can easily be increased. For purpose of raising hay it is practically unlimited at present.

The conditions in Johnson county are practically the same as those of Sheridan. The irrigable lands are watered from the Big Horn mountains; the elevation, climate and markets are the same. Land in Johnson county is somewhat cheaper than in Sheridan. I am informed that excellent ranches having adjudicated water rights can be purchased from five to fifteen dollars an acre, depending upon the character of the buildings, distance from town, etc.

N. H. Brown, Superintendent of Water Division No. 3, gives the following facts relative to prices and yields in the valley surrounding Lander:

Crops grown here are mainly hay—alfalfa, timothy and native; grain—oats, wheat and barley; vegetables—potatoes, cabbage, beets, turnips, tomatoes, cucumbers, squashes, celery, asparagus, and all kinds of vegetables commonly grown in Wisconsin, Michigan and New York, but generally better in quality and producing much more per acre.

Average yield of alfalfa hay is five tons per acre. Timothy one and one-half tons. Native, about one ton.

Oats yield an average of forty bushels per acre; wheat, about thirty-five bushels, and barley about thirty bushels.

Cattle are almost universally close herded in summer and pastured in winter until about the first of March, then fed until grass comes in April.

Sheep and horses have nearly all the open range. Hog raising is fairly profitable.

There are a good many ranches for sale. Irrigated land is held at fifteen to twenty-five dollars per acre. There is plenty of water for irrigation, and water rights are all good, except late appropriations on some of the small streams.

The only place I know where men of small means can take irrigable public land is on upper Big Wind river, but the country is high and cold, suitable for stock raising only.

In Big Horn county there is probably more unoccupied land under completed ditches than in any other section of the state. Three of the projects undertaken under the Carey act are situated in this county. Under the Cody canal about 20,000 acres of public land can be purchased for fifty cents an acre; shares in the canal, ten dollars an acre. There are about 20,000 or 25,000 acres under the canals of the Big Horn Basin Development company, and a few thousand acres under the canal of the Yellowstone Park Irrigation company, which can be had on equally favorable terms. In all of these cases long time is given on payments for canal shares, with interest at 6 per cent. On the east side of the Big Horn basin considerable land can be brought under cultivation by extending the ditches already taken out. I think it would be no exaggeration to say that in Big Horn county three times as much land can be cultivated as is now devoted to crops without building a single

additional ditch. All that is needed is more settlers. Irrigated lands in this county, along the smaller streams and under private ditches, can be purchased at from five to ten dollars an acre, on long time payments.

The following statement relative to Big Horn county has been submitted to me by Mr. W. S. Collins:

Kind of crops which can be grown: Wheat, twenty to forty bushels per acre; oats, thirty-five to eighty bushels per acre, weight, thirty-five to fifty-two pounds; alfalfa, three to five tons per acre; native hay, red top, timothy, one and one-half to three tons per acre; corn, thirty to seventy-five bushels per acre.

Cost of land and water: Land, from four to ten dollars per acre, with good ditches complete and plenty of water. Water costs from fifty cents to ten dollars per acre.

Opportunities for outside range, first-class; good profit and no risk in raising stock, except the wolves are troublesome on outside range in some localities.

More of everything raised last year than ever before. In spite of the cry of over-production, prices are better and vegetables, hay and grain scarcer than any previous year.

Our county, made up of valley, table land and mountain slopes, is adapted to the raising of all the crops that are grown in Illinois or Iowa. Home cattle and sheep can each find the locality most suitable.

Corn is a staple crop. Many farmers in the valleys, and even on the table land, are turning their attention to the raising of hogs, pasturing on alfalfa in summer, fattening them in the fall on corn.

Yes, there are plenty of lands yet not taken where water can be obtained to irrigate at small expense. Lands are very cheap here—too cheap. I do not think that there is a locality in the state where lands are as cheap. It cannot remain long in this way. There is too much difference between prices of farms here and the prices of the products of these farms.

Along the Platte valley, in the vicinity of Douglas and Casper, farm lands have recently advanced in price, so that desirable ranches will sell today for double what they would two years ago. The thing which does much to determine the value of a ranch in this section is its water front. Range stockmen are beginning to buy ranches, and the thing that they

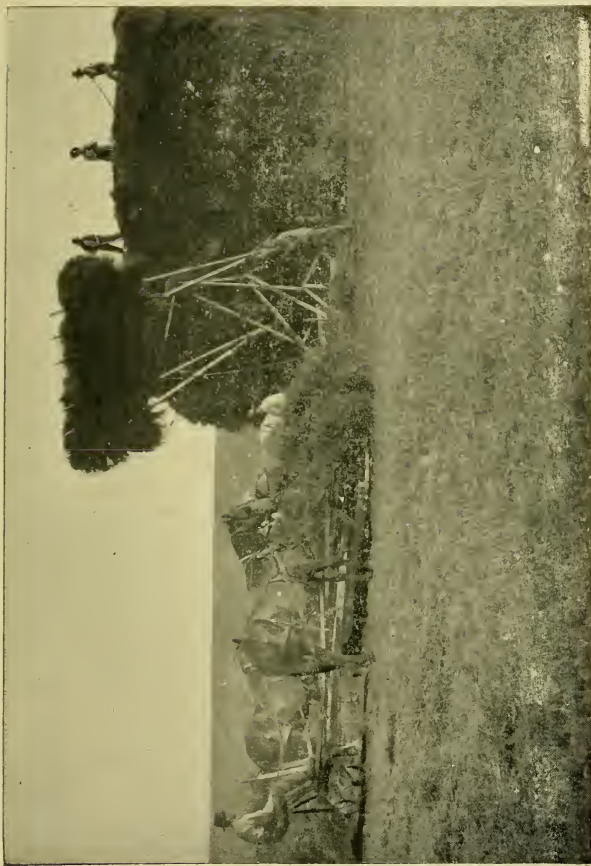
scrutinize most closely is the control which the water front gives them of the public grazing land back of it. Among the recent sales made was a ranch of 1,800 acres in Bates' Hole, which sold, with its water rights, for \$15,000. Two ranches of one hundred and sixty acres each sold for \$1,300 and \$1,500 respectively, the water rights in each case being figured as worth \$5.00 per acre. Thirteen hundred acres of land, without water rights, sold for \$5,000. Throughout this region the farmers are generally very prosperous, and there are but few ranches for sale. A few miles west of Casper, A. J. Bothwell, one of the large land owners in that section, is endeavoring to cultivate and eventually dispose of his lands by leasing them to settlers in small tracts. As this is a new departure in this state, the following extract from an article in the Casper Derrick is inserted, giving an outline of his plan:

Under all the contracts let, Mr. Bothwell keeps the ditches in repair and delivers the water for irrigation on the land leased by each farmer and guarantees a market for all hay and grain raised, agreeing that the price of grain shall not be less than one cent per pound.

Under one form of contract Mr. Bothwell makes with farmers understanding how to grow alfalfa, he leases to the farmer one hundred acres of ground with the water delivered on the land for irrigation. The farmer plants the land in small grain the first year, and the second seeds it to alfalfa. All hay and grain grown thereon the first two years belongs exclusively to the farmer. Upon the alfalfa cutting three tons of hay at two cuttings in one season, the land is turned back to the owner at the rate of ten dollars per acre in cash, and one dollar per ton for stacking the tons of hay grown thereon, thus making thirteen dollars per acre paid the farmer the year the land is turned back, besides getting all he produced on the land the two previous years.

Under this form of contract the farmer furnishes everything, and if at the delivery of the field of alfalfa to Mr. Bothwell the farmer wishes to remain on the property, a permanent contract will be made with him to manage, grow, stack and feed to stock the hay raised on said land.

Another form of contract is when the farmer knows nothing of raising alfalfa, but understands the growing of small grains. Mr. Bothwell leases him one hundred acres of land,



HARVESTING ALFALFA.

with water delivered on the land and seed to plant the same for the consideration of one-half the crop grown thereon.

Contracts will also be made with farmers to grow small grain by the pound, prices to depend upon what is expected to be furnished by the owner of the land. Under this form deals will be made where the farmer furnishes everything, or where he furnishes the labor only, seed, machinery and teams being furnished by Bothwell.

Lands, with water for irrigation, will be leased in one hundred acre tracts, by the acre, if wanted, payment to be made in cash, rent or in grain.

In a letter explaining his project and giving the reasons therefor, Mr. Bothwell enters on a very interesting and, I think, correct discussion of the agricultural conditions of this state. I quote a portion of his letter:

It is a difficult job for any man to hire help and farm several thousand acres of irrigated lands at a profit. It costs about forty-five dollars per month to wage and board a man, his labor is worth in the farming business really about one-half that amount. Hence, the lack of profit to the large land owner in Wyoming. Now, I am trying to get the farmer to farm my lands on exactly the basis that all farmers work their own lands in all countries. Great crops are always raised irrespective of the cost of production or the market. Owing to the summer grazing in Wyoming, I hope to be always able to give the farmer as much for all the crop he raises on this land as he gets in Colorado for his share. I can give two dollars per ton for all alfalfa in the stack raised on my land, while the Colorado renter sells his share for that, hence the advantage accruing to the producer who comes here, instead of farming on shares elsewhere. Cattlemen and large land owners can use any amount of alfalfa if it does not cost here more than it sells for in Colorado, which is from two to two and a half dollars per ton.

I think that the agricultural development of this state must be brought about by teaching owners of large tracts of land how to make this land productive in a way that will pay better than to use the land for grazing only, as at present. To dismember these large ranches and cut them up in small tracts, occupied by farmers, requires detail management. You cannot legislate farmers into Wyoming. They must be brought in by individual effort. Advertisement will not keep a poor farmer from starving away when he comes and finds only a sheep range for him to begin work upon. On the other hand,

all the best and cheaply watered land is now owned, and I know of no large owner of land that is not wondering how he can get an income out of his land without it costing two dollars for every one produced.

In reply to my inquiry regarding the acreage and prices of irrigated lands which can be purchased outright in Sweetwater and Upper Platte valleys, Mr. Bothwell writes as follows:

In regard to lands in this section that may be for sale, and the price asked, it is hard for me to give you any information. In a general way, I would say that it could all be purchased, but I don't know of any large, or small, owner of land that would sell the land in small tracts unless it was certain that it could all be disposed of within a short season. All the ranches have more or less grazing land that lies above the ditches, and other parts under the irrigation ditches that would not be desirable for homes in small tracts for poor settlers. The whole property has been gotten together with the view of conducting a permanent live stock business, and for a large land owner to begin to se'l his best irrigated tracts, such as is suitable for a home for a small farmer, would soon leave him with the undesirable portions of his ranch on his hands, and the portions sold would be those tracts absolutely necessary for him to retain as long as he continued in business. The whole ranch, with its live stock, forming one piece of business property, the disposal of any part would be fatal to the success of the whole.

There are about 25,000 acres of land under ditch within a radius of twenty-five miles from me, and as a rule possess good, ample water rights, all being well ditched and fenced and otherwise improved.

I know of no tract of land belonging to the public domain in this section that can be irrigated cheaply by men of limited means. If the state, or any other party, should ever construct the reservoir at Devil's Gate on the Sweetwater river, recently examined and reported upon by Captain H. M. Chittenden, Corps of Engineers, U. S. A., under the provisions of the Warren clause of the River and Harbor bill, it would then be possible to irrigate some 50,000 acres of land in this immediate vicinity. Under the present laws, however, private capital invested in the construction of the reservoir would be absolutely without security of any kind.



WILLIAMSON & COMPANY, DENVER

A TYPICAL WYOMING RANCH.

Hon. Joseph M. Carey, President of the Wyoming Development company, whose lands are located in Laramie county, fifty miles north of Cheyenne, replying, writes as follows:

Replying to your letters of recent date, I will state that irrigated lands at Wheatland, of good quality, can be purchased for twenty dollars per acre. This includes a perpetual water right. The lands are not remote from the railroad station.

By actual experiments, these lands have been found well adapted for the growing of all cereals successfully grown in this latitude. The lands are exceedingly well adapted for the growing of all root products, such as potatoes, sugar beets, turnips, etc., and there is no better country for the growing of the ordinary vegetables. Certain varieties of Indian corn do well with limited irrigation.

I do not believe there is a better country for the growing of alfalfa; three crops are cut each season.

Farm machinery is but a trifle higher than it is in Iowa and Missouri, the only difference being the freight. Hardware, dry goods and groceries are cheap.

It is difficult to give the price of farm products, because of the great changes constantly taking place, especially has this been the case during the years 1897-98. Some farmers have sold their wheat for one dollar and forty cents a hundred, and others did not receive more than ninety cents. Some have secured as high as a dollar a hundred for potatoes, while others have sold for sixty-five cents. Oats have brought from sixty-five cents to eighty-five cents a hundred pounds.

With reference to fruit growing in the Wheatland colony, I have this to say, so far as experiments have been made flattering results have been obtained. I saw a fine quality of apples, plums and cherries grown last year. There have been large yields of strawberries, gooseberries and currants.

It has been demonstrated from experiments during the last five years that sugar beets yield largely in the Wheatland colony, and possess a very high measure of sugar, running from 16 per cent to 24 per cent, the test being made by the Agricultural Department of the United States and by the University of Wyoming.

In other parts of the county land under smaller ditches can be had for from ten to twenty dollars per acre, and letters from the various counties of southern Wyoming show that the present value of irrigated farm lands ranged from five to twenty

dollars per acre. Many of the large ranch owners in Uinta county are proceeding to break up their holdings and sell them in small tracts.

From C. H. Priest, Superintendent Water Division No. 4, I was furnished a list of large tracts of land in Uinta county, which the owners desire to dispose of. From this list it appears that along Bear river and Black's Fork creek and its tributaries, there are numerous tracts of reclaimed and improved land offered for sale from five to fifteen dollars an acre. These lands are very productive, and they are adjacent to what I regard as one of the best local markets in the United States. I believe they are far below their productive value, and that they are destined to be much higher within the next five years.

Last year I made a trip through Jackson's Hole, probably the best watered section of the west; certainly the best watered section of this state. While there I formed a very high opinion of the possibilities of this region as a cattle growing district. One of the oldest, as well as most successful, stock raisers of that district is Mr. Robert E. Miller, who kindly furnished me with the following statement of the production and possibilities of that region:

The crops in this valley are principally hay—native, red top, timothy and alfalfa.

Potatoes are not a sure crop.

Rutabagas, turnips, carrots, parsnips and cabbage are a sure crop—cannot estimate the yield per acre of vegetables for lack of experience.

Hay of all kinds can be raised successfully, averaging from one to two and a half tons per acre, owing to kind, season and attention.

The future of our valley as a farming country is doubtful, as it has frosts every month in the year.

This valley is naturally adapted to cattle raising, being entirely surrounded by high ranges of mountains that cut us off from all outside ranges. The low lands are limited, our winters are long, requiring that all animals must be fed from ninety to one hundred and twenty days each year.

Then, with an unlimited summer range in comparison to the amount of low lands upon which must be raised the feed for winter, this valley raises Wyoming's best cattle.



WYOMING TURNIPS.

Early White Egg—14 $\frac{1}{4}$ pounds.

Robertson's Golden Ball—12 pounds.

Early White Egg—14 pounds

The number of animals handled is regulated by the number of tons of hay raised, as it requires one ton of hay for every animal wintered, which necessarily confines the stock raising to poor men.

There are a few ranches yet unlocated in this valley that can be made into hay-bearing land in about three years, and at an expense of about six dollars per acre.

The water supply in this valley is unlimited, owing to our nearness to the heads of the streams.

There are no ranches for sale in this valley at present. There is no market for produce of any kind, owing to our isolated condition.

There are no stores in here, consequently the rancher must buy enough supplies in the fall for the following year.

So long as improved farm land remains as low as it is at present, it will not pay to build canals to direct our large rivers. It will cost from ten to twenty dollars an acre to put water on the bench lands bordering either the Platte, Green or Big Horn rivers, and it will take millions of dollars to build the canals. Capital cannot be had for this work so long as there is no security for its investment, and while land and water can be had for less than these canals will cost. So long as these conditions continue, Wyoming will never be what it should be as an agricultural state. The largest and best bodies of farming lands are in the valleys of these main streams, and they provide the most stable water supply.

Taxes and Public Indebtedness.

The wise restrictions in the state constitution are a sure guarantee that in Wyoming taxation will never be excessive, or the public debt burdensome. It is there provided that for state revenue there shall not be levied to exceed four mills on the dollar of the assessed value of property for all state purposes, except for the payment of the public debt with interest, and the support of state educational and charitable institutions,

and not to exceed twelve mills on the dollar for all county purposes, excepting state revenue and the county debt. Special school taxes may be authorized by the qualified voters of the several districts.

Incorporated cities and towns are limited to eight mills on the dollar, excepting for the payment of their public debt.

The state debt is limited to 1 per cent of the assessed valuation, while 2 per cent is the limitation on counties, cities and towns.

The tax levy for all state purposes in the year 1897 was six mills, while the county levies for the same year averaged about fourteen mills for all purposes. The 1897 tax is a fair index of past years.

The state revenue is derived from taxes, official fees and rent of public lands. All public officers are paid fixed salaries, and the fees collected by them are paid into the public treasury, thus realizing annually to the public a large sum: in fact, nearly every officer collects a sum equal to the expense of his department. From the rent of public lands a large revenue is derived, which is used for the support of certain state institutions and the schools.

The legislative body is composed of a total of fifty-seven members, whose per diem is five dollars per day for a limited biennial session of forty days. All other official salaries are moderate, and general state and county expenses have been reduced to a minimum. The plan of making each department of state and county government and every public institution self-supporting has been countenanced and authorized by wise legislation.

There is nothing in the present situation to indicate that the rate of taxation in Wyoming will increase, but, on the contrary, reasonable expectation that with settlement and development will come a corresponding increase of taxable wealth to carry its proportionate share of governmental expense, thus reducing the general levy.

The amount of bonded indebtedness of the school districts of the different counties is given in the article on Educational Advantages.

The total bonded debt of the state is \$320,000, while that of the counties varies and may be ascertained from the following table:

BONDED INDEBTEDNESS OF THE COUNTIES AND PRINCIPAL CITIES OF WYOMING.

COUNTY.	AMOUNT.	CITY.	AMOUNT.
Albany	\$142,000.00	Laramie	\$ 86,400.00
*Big Horn	-----		
Carbon	144,000.00	Rawlins	35,000.00
Converse	60,000.00	Douglas	8,000.00
Crook	80,000.00	Sundance	15,000.00
Fremont	46,000.00		
Johnson	75,000.00	Buffalo	45,000.00
Laramie	400,000.00	Cheyenne..	252,500.00
Natrona	22,000.00	Casper	23,000.00
Sheridan	31,000.00	Sheridan	75,000.00
Sweetwater	93,000.00	Rock Springs	24,000.00
Uinta	103,500.00	Evanston	26,000.00
Weston	39,800.00	Newcastle	13,000.00

*—A small amount of the Johnson, Fremont and Sheridan county indebtedness may be decided by the court as properly payable by Big Horn county, on account of the segregation of territory in forming a new county.

MINERAL RESOURCES.

BY PROF. WILBUR C. KNIGHT,

State Geologist.

There are few states in the Union that possess mineral resources as vast and varied as Wyoming. But there is not another state as rich in mineral wealth, that the general public knows so little about, and where the resources are so universally ignored. Located, as it is, in the midst of the Rocky mountains, and nearly surrounded with states of great mining

interests, it is unexplainable why Wyoming has never produced a Leadville, Aspen, Deadwood or Butte. The mountains are as high and rugged; they are traversed by mineralized veins and discoveries are numerous throughout the ranges. Camps have been located and prospectors have attempted, at least, to make some mines. This prospecting, however, has never been thorough, the shafts are shallow and lateral development very slight. In fact, there is not a shaft in the state, so far as I know, that is 300 feet deep, and yet from shallow workings of this kind prospects have produced from \$40,000 to \$200,000. Unfortunately for Wyoming, the classes of men attempting mining have been those unexperienced in any kind of mining; at the outset they anticipated that a small expenditure this month meant large returns the next. They have considered that a few hundred dollars would soon make a prospect worth many thousands. They have been disappointed time and time again. This class has not realized that it costs on the average \$35,000 to make a mine out of a prospect, to say nothing of mills to work the ore. At the present time there is not a reasonably good prospect in this state that has been thoroughly prospected. This drawback, coupled with the work of dishonest manipulations, has been the stumbling block in the mining industries in Wyoming. They can be removed, and as soon as this has been done, the mineral output will gradually increase until this state will compare favorably with its near neighbors. Making a mine is like building up a profession or business. It takes money and time and careful manipulation, without which, only failure awaits anyone starting in the search for gold.

The fact that gold, silver, copper and lead ores are known in every mountain range, is sufficient evidence that mines can be made here as in other localities. What Wyoming needs at this time more than anything else in connection with its mineral resources, is a few thorough mining men, who have ample means to make a mine out of some of the good prospects. As soon as it is proven that depth means a mine, then there will be no further trouble. There is not another state in the Rocky mountains with greater possibilities than Wyoming; none with so much public domain subject to location as mineral land. Besides the precious metals, the wealth of coal, oil and gas will make Wyoming as great a state as Pennsylvania.

GOLD MINING.—Gold mines were opened in Wyoming in 1867, since which date the industry has amounted to something each year. The production per annum has fluctuated

from \$25,000 to \$125,000. The placer mines that were rich enough to be worked with limited means, were worked out years ago. Large tracts of placer gold ground that can only be worked with great expenditure of money and the most modern and economic devices, remain. These are now owned by large companies, who are arranging to work them. The quartz veins, from which the most of the gold has been taken, and which will furnish the most of the yellow metal in the future, are found in all of the mountains. Districts that have been very prominent are as follows: The Sweetwater country; Seminoe mountains, Medicine Bow mountains, Black Hills, Shoshone mountains, and the Laramie mountains. Recently the discoveries at Grand Encampment places the Sierra Madre mountains in this list. All of the camps mentioned have produced some gold, and there are excellent surface indications, but there is not an instance where there has been sufficient work done to absolutely prove the value of the veins. Prospects have been worked, and produced, and shut down. The owners having found a good ore chute near the surface, worked it out and would not continue the development. In consequence we have no great mines, and cannot have any until some enterprising company will sink a shaft deep enough to prospect the veins. As a rule, a vein with good ore near the surface is a very favorable prospect. These are common in Wyoming, and should the shafts be carried to sufficient depth, the veins will prove valuable. At present the industry is at its lowest ebb, but in the future we may expect it to compare favorably with those of the adjoining states. This will happen when mining men with capital behind them, will go into the gold camps in Wyoming and prospect as they do in Colorado, but not before.

SILVER AND LEAD.—There are silver and lead prospects in nearly all of the mountain ranges. Galena is the leading ore, and it always has silver associated. The silver value varies from ten to six hundred ounces per ton. All of these prospects are located a long distance from the railroad. Camps have been located in Crook, Big Horn, Carbon, Albany and Laramie counties. While Wyoming may have as good lead and silver camps as any other state, it is a hard matter to interest capital in a proposition ranging from fifty to two hundred miles from the railroad. The productions of either of these metals is very small indeed.

COPPER.—Copper prospects are very numerous. Mines have been successfully operated in Laramie and Carbon coun-

ties. The production has been about one thousand tons of refined copper. There are two classes of ores: The oxides and carbonates that are found in the limestone, and the sulphides that are found in nearly all formations. Recently copper properties at Jelm mountain and Grand Encampment have received much attention and will be worked this season.

COAL MINES.—Coal mining is the leading mineral industry in the state, and will, in all probability, remain such for years to come. It had its origin with the advent of the transcontinental railroad, and has increased with the development of the state until today it employs an army of workmen and has a product of nearly 3,000,000 tons of coal per annum.

The kinds of coal vary from a pure lignite to a high grade long-flamed bituminous variety. A semi-anthracite was discovered in Johnson county in 1897. Coking coal has been discovered in two or three localities and coke ovens are operated at Cambria. The best grades of coal are low in sulphur and ash, and are excellent fuels for locomotives, general steam making, domestic purposes, and gas producers.

The coal fields are so universal that coal is known to exist in every county, and in all but one, coal mines are worked. The area of workable coal land is over 20,000 square miles; and when the preliminary survey of the coal fields has been completed, the coal producing territory will reach at least 25,000 square miles. The coal veins are numerous. In a single field it is not an uncommon thing to find six or eight workable veins. In thickness the seams vary from a few to seventy-five feet. The coal mines operating at present have working veins varying from four to forty feet. The coal lands are owned, to a large extent, by the Government, and are subject to location by any citizen who has not exhausted his right. Already three great railroads have penetrated these fields, but the industry has only started, and by the termination of another quarter of a century, Wyoming will be producing not less than 10,000,000 tons of coal per annum.

PETROLEUM.—Eighteen oil fields are known in Wyoming, and several more will be discovered when prospected for. In each of these fields, oil is flowing from springs, or there are thick bands of oil-sand exposed. The greater number of these fields are situated in the central part of the state, but there are fields in the northeastern part, in the southwestern portion and in the northern central region. The oils that have been analyzed vary in nature from high grade lubricating to oils that will produce from 40 to 50 per cent of kerosene. None of the

developed fields are less than fifty miles from the railroad, and in consequence, the oil industry is not of much importance. Salt Creek district is the only one that is making regular shipments, and this has to be hauled by wagon fifty miles to Casper, where it is refined. Other districts are producers, but there is no market. On the Popo Agie river, near Lander, are three wells that will produce six hundred barrels of oil per day. These wells have lain idle for years, because of the lack of railroads for transportation. From what is known at the present time, Wyoming will, when the oil fields have been developed, produce as much oil as any of the eastern states. All of the fields now known have been discovered by people passing through the country on other business. Prospecting for oil, as is the custom in the east, has never been heard of. With proper facilities for transportation, the oil industry in Wyoming will only be second in importance to the coal.

NATURAL GAS.—Accompanying the oil fields, are numerous natural gas horizons that are almost unknown. The gas pressure in the oil well near Lander is very great, and gas escapes are found at or near most of the oil springs. In the eastern part of Fremont county there are two natural gas escapes that are wonders. Some prospectors have dug shallow shafts and curbed them up with logs. The shafts are partially filled with water, and the gas escapes with such violence as to cause the water in them to boil as though in a cauldron. There are numerous anticlinals in the state that are not associated with the oil districts, where large flows of gas may be looked for.

BITUMINOUS SHALE.—In the Green River valley there are great bands of rich bituminous shale that equal the shales of Scotland, where an army of men are employed, and the production is sold for millions of dollars per annum. The shales are burned in a retort and the products saved are gas, oil, tar and ammonium sulphate. This industry will at no distant day prove to be a valuable one to the state.

ARSENIC.—Ores of arsenic are found associated with ores of gold and silver, and in several localities there are extensive bodies of mispickel. None of the arsenic ores are mined for the manufacture of arsenic compounds.

VOLCANIC ASH.—From several localities in Wyoming, volcanic ash has been reported. In Albany county, near Laramie, there is a bed four feet in depth. It is almost white, and is so fine that the greater portion of it will pass through a one hundred mesh sieve. Samples of equal purity have been exam-

ined from Carbon and Sweetwater counties. This mineral is used for scouring purposes. It is the base of sapolio, and is also used in the geyserite soap.

GRAPHITE.—Veins of graphite are known at Plumbago canyon and French creek and Hallack canyon in Albany county and in the Indian Grove mountains in Carbon county. The veins are large and are easily accessible. Analysis from the various localities shows the carbon contents to vary from 40 to 60 per cent. So far as known, the ore is of the amorphous variety, and would make a good fire-proof paint, stove polish or graphite crucibles.

ASPHALTUM.—Along the north side of the Rattlesnake mountains, there are several deposits of asphaltum that occur below the oil springs. There are also places where the asphaltum has penetrated loose rock and earth. The beds are not very extensive, but are sufficiently large to pay for opening. There is also another bed on the Shoshone Reservation east of Fort Washakie. This has been formed about an oil spring and contains several thousand tons. No attempt has been made to work the deposits. The quality is excellent, quite free from foreign matter, and it would make a splendid paying mineral.

MANGANESE ORES.—Ores that fall under this class have been found in Albany, Crook and Uinta counties. The development is only slight, since the discoveries are too far from railroads to warrant shipments. The ores are good grade, and, judging from the samples seen, are found in good sized veins. Samples from different localities vary from 40 to 55 per cent of manganese.

EPSOM SALTS.—Epsom salt can be found in small quantities throughout the arid regions, but in Wyoming it is found in large beds. Near Rock creek there is a depression containing about ninety acres that is covered with this salt. The exact depth is not known. In this immediate vicinity there are several other beds. The salt is as pure as the commercial product that sells in our drug stores for ten cents per ounce. These deposits are near the railroad, and if properly handled, should enable a company to control the epsom salt trade of America.

BUILDING STONE.—Building stones of innumerable varieties are common throughout the state. The stone industry, however, has never been of much more than local importance, and only a few quarries have been opened with a view to export trade. Granite, sandstone, limestone, serpentine,

quartzite, marbles and marble onyx are included in the varieties. The majority of these are found in inexhaustible beds and are unsurpassed for beauty and durability. There is no reason why the stone industry of Wyoming should not compare favorably with that of Colorado.

GYPSUM.—This mineral is very common and is found in all varieties. Beds varying from twenty to one hundred feet in thickness are exposed along the mountain ranges. The mineral is very pure and can be utilized for purposes where gypsum is required.

PLASTER OF PARIS.—The Rocky Mountain Plaster company are operating a plaster mill at Red Buttes, which is the only one in the state. There is room and material in sight to supply a thousand mills; in fact, Wyoming could furnish the world with plaster of paris for a thousand years, and then not consider the beds exhausted.

NATURAL PLASTER.—In a few localities deposits of what has been called a natural plaster has been found. The mineral is found in superficial deposits, varying from two to six feet in depth. It is pulverent and has a light gray color. When a portion of the water has been driven off, it sets and forms a very hard cement. The Standard Plaster company of Laramie are manufacturing a plaster from beds recently opened near Laramie. Similar deposits have been worked in Kansas, and no doubt in numerous localities in Wyoming beds of this natural plaster will be found when prospected for.

CLAYS.—There are a few places in the state where common brick are manufactured, but there are no other clay industries. The clay beds are in abundance and are found in every county in the state. Common brick clay, fire clay, tile and terra cotta clay and potters' clay are found in thick beds in the sedimentary rocks, and not in superficial deposits, as are usually seen in the northern and eastern states. The clay has not been studied, and one cannot at this time predict the future of the clay industries. Only a few years ago a clay was discovered at Rock creek that was called mineral soap. For a number of years this clay has been sold in car loads to eastern clay men. No one seems to know what they use the clay for, but the industry is on the increase each year, and it seems reasonable that it will ere long be of considerable importance.

TIN.—Black oxide of tin has been known in veins and as stream tin in the Wyoming portion of the Black Hills, for many years. Tons of stream tin have been mined and sold. The

veins are slightly developed. Prior to the failure of the Dakota tin mining companies, the prospects on the west side of the hills were considered quite valuable. There are good veins of tin of average richness, and before many years the tin mines of Dakota and Wyoming will be worked.

SALT.—Salt springs, rich enough to warrant the establishment of a salt plant, occur in Weston, Johnson and Uinta counties. Salt has been manufactured in Uinta and Weston counties, but for local consumption only.

QUARTZ.—The Laramie mountains abound in large veins of pure quartz. When ground, it is quite valuable for glass-making.

GLASS SAND.—There are numerous places in the state where glass sand is found. The beds near Laramie have been worked and proven.

MICA.—Muscovite mica, or the mica of commerce, is very plentiful in Wyoming, but there are only a few localities where it has been found in "book" of sufficient size to warrant mining. In Whalen canyon, some eight or ten miles from Hartville, there are numerous large veins of feldspar containing first-class mica. It has been worked to some extent and a small shipment made. Sheets squaring six inches have been taken out near the surface. It is first quality in every respect.

FELDSPAR.—Orthoclase feldspar occurs in large veins in Whalen canyon. It is free from detrimental minerals, and could be utilized for all purposes where orthoclase could be used.

SULPHUR.—Extensive deposits of native sulphur are known in Uinta county. While claims are held by prospectors, no attempt has been made to refine the crude brimstone, which assays from 40 to 70 per cent of sulphur.

BISMUTH.—Bismuth ore of rare purity has been mined at Jelm mountain, and shipped to the east for reduction. The ore is a mixture of carbonates and metallic bismuth, and assays from 50 to 65 per cent of metal. The mine has not been worked in recent years.

SULPHATE OF ALUMINUM.—This mineral, which is usually called native alum, occurs in extensive deposits in Sweetwater and Big Horn counties. It is the principal salt used in manufacturing commercial alums, and for this purpose it should be utilized in connection with the natural soda.

IRON.—Second to no state in the Union are the deposits of iron ore. Prospecting along this line has not been carried

on to any extent, and only iron districts reasonably near the railroads have received any attention. The greatest deposits are red hematites, quite free from sulphur and phosphorous, and quite low in silica. The only districts where development or mining have been carried on are Hartville, Rawlins and Seminoe. In these camps are large deposits of soft ore, which makes an excellent pigment. The hard ores are found beneath the surface in bodies varying from ten to one hundred feet in thickness. Rawlins and Hartville have furnished thousands of tons of ore to be used by the Salt Lake and Denvers smelters as a flux for lead and copper smelting. Beside the hematites, there are great deposits of maquetites in the Laramie mountains, and beds of clay iron stone in the cretaceous rocks. Hematite ore has been found in Crook, Johnson, Uinta, Fremont, Big Horn, Albany and Sheridan counties. The ores examined are of exceptional purity.

FIBROUS TALC.—During the season of 1897, Mr. Hightown of Wheatland discovered a very large vein of fibrous talc in the range of mountains west of Wheatland. The quality is excellent. This mineral is used extensively in the east, and as soon as the proper transportation can be furnished, the Wyoming deposits will be worked.

DECOMPOSED GRANITE.—Some three years ago the Union Pacific Railroad company commenced loading decomposed granite from a point near Sherman and hauling it out as ballast. It was found to be far superior to any other stone for this purpose. Last year the company loaded 304,936 tons, the most of which was used by the company; but it was, to some extent, sold for road building in cities; a use to which it is well adapted, and for which it will, in the near future, be extensively used.

NATURAL PIGMENTS.—Soft iron ores have been utilized for red paint for years. For many years paint mills were operated at Rawlins. In recent years the ore has been shipped to other states to be ground. The soft hematite ores are in large bodies and make a first-class paint. Ochres of various shades are known, but the beds have not been worked. Graphite that would make an excellent fire-proof paint is found in large bodies, but so far it has not been utilized.

SEMI-PRECIOUS STONES.—The semi-precious stones are in abundance. Quartz crystals, agates, jaspers, moss agates, petrified wood, garnets and beryls are the important ones. The moss agates are the best found in the world. Thus far no precious stones have been reported.

NATURAL SODA.—Extensive deposits of natural soda are known in Carbon, Natrona and Albany counties. Numerous springs contain considerable soda, and at Green River a well yields a saturated solution of sodium carbonate. The deposits vary in size from a few to one hundred acres, and the soda ranges in thickness from a few inches to sixteen feet, and possibly more. These deposits are chiefly sodium sulphate, but there are carbonates and possibly some bi-carbonates in some localities; along the Sweetwater river there are deposits that contain 60 per cent of carbonate, while on the Laramie plains there is no carbonate found. Attempts have been made to work these great deposits of soda, but so far they have not been successful. The sulphate, when dried and calcined, has been sold in the east for glass making, and also used at the Laramie glass factory. With proper machinery, these great beds of soda can be utilized and would bring in a large revenue each year.

ASBESTOS.—There are two minerals called asbestos, one a serpentine and a second an amphibole. The latter is the true asbestos, but the former is sold under the same name and used in the same way. The asbestos that is found in Wyoming, with the exception of small mineralogical specimens, belongs to the serpentine variety, and is known as chrysotile. Valuable deposits of this mineral have been found in Natrona, Albany and Carbon counties. Natrona county has marketed some of the mineral. The long distance from the railroad will forbid work upon the majority of these discoveries for some years to come.

WARM SPRINGS.—Warm springs, highly charged with minerals, are numerous, so numerous that space cannot be given to enumerate them. Some of them are marvels, and will in years to come be known the world over. Saratoga and Big Horn Springs have already been proven. The Big Horn Springs, although over two hundred miles from the railroad, have a large number of visitors each year. It is not an unusual sight to see people two hundred miles from these springs, in a covered wagon, with a helpless invalid, headed for the Big Horn canyon.

MINERAL OUTPUT FOR THE YEAR 1897, VALUED
AT PLACE OF PRODUCTION.

	Production—Tons.	Value.
Coal	2,744,960	\$3,431,200.00
Coke	23,800	47,600.00
Decomposed Granite ...	304,936	152,467.50
Iron Ore	10,720	64,320.00
Plaster.	3,100	36,600.00
Petroleum	6,000	54,000.00
Clay	150	910.00
Gold	—	37,000.00
Total...		\$3,824,097.50

A CATALOGUE OF WYOMING MINERALS.

WILBUR C. KNIGHT,

State Geologist.

In 1893 I published a list of the minerals found in Wyoming. Since that time, numerous others have been discovered. The following list is complete up to date. The numbers used are the same as in Dana's Mineralogy. The omitted numbers signify that the corresponding minerals are not known in Wyoming.

GRAPHITE.—No. 2 Amorphous varieties have been reported from Laramie, Albany, Carbon, Converse and Fremont counties. Foliated graphite has been found at Hallack canyon. This mineral is used for lead pencils, stove polish, crucibles and paint.

SULPHUR.—No. 3. Native sulphur occurs in large deposits in Big Horn and Uinta counties.

BISMUTH.—No. 11. Bright particles of metallic bismuth found at Jelm mountain, Albany county, associated with a carbonate of bismuth.

GOLD.—No. 15. In placers and quartz veins in all of the mountain ranges in the state. Beautiful crystals are found in Douglas creek placer mine.

COPPER.—No. 15. At Tie Siding, Albany, nuggets of copper have been found that would weigh from ten ounces to two hundred pounds. It has also been found as small flakes in numerous other localities.

MERCURY.—No. 16. Found in the King David mine, Silver Crown, on the one hundred and fifteen feet level.

PLATINUM.—No. 22. Associated with placer gold, in mines on Douglas creek, Albany county.

IRON.—No. 25. Meteoric, found in Laramie county, 1887.

REALGAR.—No. 26. Associated with arsenical gold ores in Fremont county, and found in the vicinity of Cokeville, Uinta county.

ORPIMENT.—No. 27. Associated with realgar in Fremont and Uinta counties.

MOLYBDENITE.—No. 34. Larmie, Albany, Johnson, Fremont and Big Horn counties. This mineral is usually found in thin scales and resembles graphite. It is also often mistaken for lead ore. It has no commercial importance.

ARGENTITE (Silver Glance).—No. 42. Running water mine, Converse county and the Wood river mines, Big Horn county.

GALENA.—No. 45. A common ore in the mountains, usually carrying silver.

CHALCOCITE.—No. 54. A common ore, and usually found very pure. Samples often assay 70 per cent of copper.

SPHALERITE.—No. 58. Only found in the Ferris mountains.

NULLERITE.—No. 70. Reported as occurring with the copper ores from the Ferris mountains. This has not been confirmed.

PYRRHOTITE.—No. 74. Large veins are known in the vicinity of Laramie Peak.

CHALCOPYRITE.—No. 83. A common copper ore in Wyoming.

PYRITE.—No. 85. Very common. Found in veins and associated with sedimentary rocks.

MARCASITE.—No. 96. Found in veins in the Medicine Bow mountains, not far from La Platte mines.

ARSENOPYRITE.—No. 98. Whalen canyon and Silver Crown, Laramie county; Medicine Bow mountains, Carbon county, and Atlantic, Fremont county.

KREUNERITE.—No. 105. Based upon the determination of a single specimen found in a quartz vein on Douglas creek, Albany county.

ICTRAHEDRITE (Gray Copper).—No. 148. From the Sierra Madre mountains in Carbon county and Whalen canyon, Laramie county.

HALITE (Common Salt).—No. 166. Uinta, Weston, Johnson and Big Horn counties.

CERARGYRITE (Horn Silver).—No. 169. Black Buttes mines, Crook county.

FLUORITE.—No. 175. Near Tie Siding, Albany county.

QUARTZ.—No. 210. 1—Quartz crystals, common.

3—Amethyst, Boulder ridge, Albany county; Red Desert, Sweetwater county, and Amethyst mountain, Big Horn county.

4—Rice quartz, Crook county.

6—Smoky quartz, Plumbago canyon, Albany county.

7—Milky quartz, common.

Cryptocrystalline Varieties.—1—Chalcedony, very common and in great variety. Beautiful specimens of mammillary and stalactite chalcedony are found in the northern part of Albany county. Chalcedony geodes occur in Whalen canyon, Laramie county.

2—Carnelian, Sage Hen creek, Natrona county.

3—Chrysoprase, Fremont county, and in the vicinity of Agate lake, Natrona county.

4—Prase.

6—Agates:

a. Banded, Fremont, Natrona and Albany counties.

b. Clouded agates, common.

c. Moss agate, beautiful specimens at Hartville, Laramie county; Split Rock, Natrona county, and Chugwater creek, Laramie county.

Agatized wood, common.

9—Agate jasper, Carbon and Albany counties.

11—Flint, very common.

12—Hornstone, Fremont county.

14—Jasper, abundant once in great variety, besides the above. Quartzite very abundant.

TRIDYMITE.—No. 211. Sweetwater county, associated with late eruptives.

OPAL.—No. 212. Fremont, Uinta, Natrona and Albany counties. Precious opals not known. Opalized wood in many localities.

CUPRITE.—No. 224. Silver Crown, Laramie county, and Rock Creek, Carbon county.

LEUORITE.—No. 230. Michigan and Sunrise mines, Laramie county.

CORUNDUM.—No. 231. Wind River mountains.

HEMATITE.—No. 232. 1—Specular, Laramie Peak and Tie Siding, Albany county.

2—Compact column, Hartville, Laramie county.

3—Red Ocherous, Hartville, Rawlins and Seminoe.

4—Clay limestone, common in the cretaceous rocks.

ILMENTITE.—No. 233. Iron mountain, Albany county.

MAGNETITE.—No. 237. Laramie mountains, Laramie and Albany counties.

CHROMITE.—No. 241. Dutton creek, Carbon county.

MINIUM.—No. 244. Lenox mine, Silver Crown.

CASSITERITE (Black Tin).—No. 248. Black Hills, Crook county.

PYROLUSITE.—No. 254. Albany and Crook counties.

TINGITE.—No. 255. Crook county.

MANGANITE.—No. 258. Albany county.

LIMONITE.—No. 259. Miners' Delight, Fremont county; Medicine Bow mountains; good crystals limonite after pyrites.

PSILOMELANE.—No. 269. Warren's Peak, Crook county.

CALCITE.—No. 270. Varieties based chiefly upon crystallization and accidental impurities.

1—Dogtooth spar, beautiful, crystals at Cold Springs, Laramie county; Nailhead spar, Table mountain cavern.

2—Satin spar, Rock creek, near the old stage crossing.

3—Granular limestone, common in carboniferous rocks.

Hard compact limestone very common.

Lithographic stone, Vermillion creek, Sweetwater county.

Hydraulic limestone, quite common.

Marbles in variety—general.

Onyx marble, Hartville and Cokeville.

a. Stalactites, Table mountain cavern.

b. Stalagmite, Table mountain cavern.

c. Travertine, Table mountain cavern.

Dolomitic calcite, near Laramie.

DOLORMITE.—No. 271. Twelve miles west of Uva, Laramie county.

SIDERITE.—No. 273. Fremont, Big Horn, Albany and Carbon counties—extent of deposits not known.

ARAGONITE.—No. 277. Perfect crystals near the Big Horn Hot Springs. Pseudomorphs after hanksite, Albany county.

CERUSSITE.—No. 281. Lenox mine, Silver Crown, Laramie county.

BISMUTOSPHERITE.—No. 283. McMullen mine, Jelm mountain, Albany county.

MALACHITE.—No. 288. Very common—good crystallized specimens at the Sunrise mine, Hartville.

AZURRITE.—No. 289. Very common.

NATRON.—No. 296. Sweetwater soda mines, Natrona county.

TRONA.—No. 299. From the same deposits as natron.

ORTHOCLASE.—No. 313. Very common. Valuable veins near Whalen canyon, Laramie county.

MICROCLINE.—No. 314. Hallack canyon, Albany county.

ANORTHOCLASE.—No. 315. Obsidian cliff, Yellowstone Park.

OLIGOCLASE.—No. 316. Laramie, Albany, Carbon and Fremont counties.

LABRADORITE.—No. 319. Common in the Laramie mountains.

LEUCITE.—No. 321. Leucite hills, Sweetwater county.

PYROXENE.—No. 325. Very common in the archæan rocks. Varie y Angite associated with the eruptive rocks.

PECTOLITE.—No. 330. Ferris mountains, Carbon county.

ANTHOPHYLLITE.—No. 337. Near Owen P. O., Albany county.

AMPHIBOLE.—No. 338. Common. Actinolite found in the Laramie mountains; hornblende very common.

CROCIDOLITE.—No. 341. Bradley's Peak, Carbon county, associated with epidiorite.

BERYL.—No. 344. Large crystals are numerous east of Whalen canyon, Laramie county.

NOSELITE.—No. 364. Leucite hills, Sweetwater county.

GARNET.—No. 370. Common in great variety;

Grassularite, Laramie mountains.

Pyrope, Laramie and Medicine Bow mountains;

Massive garnet, Boulder ridge, Albany county.

CHRYSOLITE.—No. 376. Fremont Peak, Fremont county.

FAYALITE.—No. 377. Obsidian cliff, Yellowstone Park.

ZIRCON.—No. 394. South, Pass, Fremont county.

CYANITE.—No. 400. Medicine Peak, Carbon county.

GADOLINITE.—No. 404. Near Iron mountain, Albany county.

EPIDOTE.—No. 407. Very common in archean rocks—good crystals near Laramie Peak.

TOURMALINE.—No. 426. Laramie mountains and near Hartville, Laramie county.

STAUROLITE.—No. 428. Phalen canyon, Laramie county.

MORDENITE.—No. 437. Hoo-doo mountains, Big Horn county.

MUSCOVITE.—No. 458. Common; large crystals of excellent quality at Whalen canyon.

BIOTITE.—No. 462. Very common in archean rocks.

PHLOGOPITE.—No. 462 A. Leucite hills, Sweetwater county.

LEPIDOMELANE.—No. 462 B. Laramie mountains.

SERPENTINE.—No. 481. Natrona, Carbon and Albany counties.

Asbestos-Chrysotile, same localities.

TALC.—No. 484. Very common. A good quality of fibrous talc was recently found west of Wheatland.

SAPONITE.—No. 488. Reported from Crook county—not confirmed.

KAOLINITE.—No. 492. Impure varieties are common. Under this head there are numerous varieties of clays.

Beutonite, a new variety found at Rock Creek and Newcastle.

CHRYSOCOLLA.—No. 504. Laramie mountains and Hartville.

COLUMBITE.—No. 525. Nigger hill, Crook county.

APATITE.—No. 549. Sweetwater county and near Welcome, Crook county.

OLIVENITE.—No. 561. Essex mountain, Sweetwater county.

WAVELLITE.—No. 636. Separation, Carbon county.

SODA NITRE.—No. 683. Leucite hills, Sweetwater county.

NITRE.—No. 684. Leucite hills, Sweetwater county.

BORAX.—No. 707. Reported from Fremont county, but not confirmed.

THENARDITE.—No. 716. Found in depression, in the arid region.

BARITE.—No. 719. Red Desert, Sweetwater county; Como bluff, Carbon county.

MIRABILITE.—No. 743. Natural sulphate of soda so common in Wyoming.

GYPSUM.—No. 746. Very common in thick beds, and pure.

Varieties:

1—Selenite, crystallized.

2—Fibrous, satin spar.

3—Massive, alabaster.

EPSOMITE.—No. 748. Common; in large deposits in Albany county; also abundant in Sweetwater county.

MELANTERTH.—No. 751. Whalen canyon and Big Horn county.

CHALCANTHITE.—No. 755. Silver Crown, Laramie county.

ALUNOGEN.—No. 775. This mineral is usually called alum. It is found in large deposits in Big Horn and Sweetwater counties.

WULFENITE.—No. 818. Lenox mine, Silver Crown, Laramie county.

OZOCERITE.—Reported from Fremont county.

SUCCINITE (amber).—Found in the coal at various places.

PETROLEUM.—Very common, in great variety.

ASPHALTUM.—Natrona and Fremont counties.

NATURAL GAS.—Fremont and Natrona counties.

COAL.—BITUMINOUS, Weston, Sweetwater, Carbon, Uinta and Johnson counties.

SEMI-ANTHRACITE.—Buffalo, Wyoming.

LIGNITE, general.

Total number of species, one hundred and eight.

COAL AND COKE.

OUTPUT OF COAL IN WYOMING.

Year.	Tons.	Year.	Tons.
1868.....	6,925	1883.....	779,689
1869.....	58,186	1884.....	902,620
1870.....	105,295	1885.....	807,328
1871.....	147,328	1886.....	829,355
1872.....	221,745	1887.....	1,170,318
1873.....	259,700	1888.....	1,481,540
1874.....	219,061	1889.....	1,388,276
1875.....	300,808	1890.....	1,870,366
1876.....	334,550	1891.....	2,097,642
1877.....	342,853	1892.....	2,408,165

Year.	Tons.	Year.	Tons.
1878.....	233,200	1893.....	2,243,401
1879.....	400,991	1894.....	2,202,635
1880.....	527,811	1895.....	2,016,601
1881.....	628,181	1896.....	2,163,187
1882.....	707,764	1897.....	2,563,133

Total output 29,618,654

These figures do not include the output of small mines operated by ranchmen at points remote from railroads.

OUTPUT OF COKE IN WYOMING.

Year.	Tons.
1891	1,413
1892	1,025
1893	2,916
1894	4,352
1895	4,363
1896	15,488
1897	22,811

Total output 52,368

All coke so far manufactured in this state has been made at Cambria, and the great increase in the amount produced in the past two years indicates the growth of an industry that will eventually employ thousands of men.

The figures given above have been compiled from Mineral Resources of the United States (1891) and from reports of the State Mine Inspector of Wyoming, and represent the best data obtainable upon the subject.

Wyoming stands thirteenth in the list of coal producing states, and while the amount produced in other states has remained stationary in the past two years, the amount produced in Wyoming has increased 20 per cent.

Wyoming stands eleventh in the list of coke producing states; the production has increased 50 per cent in the past year, and 300 per cent in the past two years.

Banking Facilities and Interest Rates.

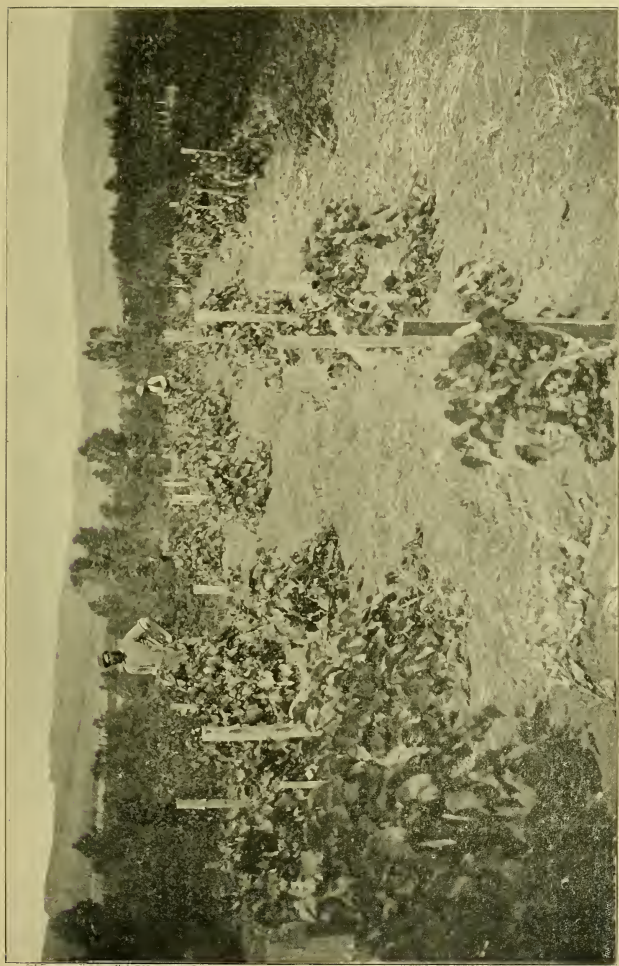
In all the larger towns of the state are located national banks, while in the smaller towns are found banks incorporated under the state law or operating as private banks. The legal rate of interest is 8 per cent, but any rate agreed upon, not exceeding 12 per cent per annum, is valid. The bank rate on time deposits is 4 per cent.

The following is a list of the banks now doing business in the state:

NAME.	LOCATION.	CAPITAL.
NATIONAL BANKS.		
Stock Growers' National Bank.....	Cheyenne	\$ 100,000 00
First National Bank of Cheyenne.....	Cheyenne.....	100,000 00
First National Bank of Laramie.....	Laramie.....	100,000 00
Albany County National Bank.....	Laramie.....	100,000 00
First National Bank of Buffalo.....	Buffalo.....	100,000 00
First National Bank of Rawlins.....	Rawlins.....	75,000 00
First National Bank of Douglas.....	Douglas.....	75,000 00
First National Bank of Rock Springs....	Rock Springs.....	60,000 00
Rock Springs National Bank.....	Rock Springs.....	50,000 00
First National Bank of Lander.....	Lander.....	50,000 00
First National Bank of Sheridan.....	Sheridan	50,000 00
STATE BANKS.		
Carbon State Bank.....	Carbon.....	12,000 00
Morris State Bank.....	Green River.....	10,000 00
Bank of Newcastle.....	Newcastle.....	10,000 00
Sheridan Banking Company.....	Sheridan.....	10,000 00
Bank of Commerce.....	Sheridan	10,000 00
PRIVATE BANKS.		
Beckwith & Company.....	Evanston	78,000 00
North & Stone.....	Evanston.....	35,000 00
Noble, Lane & Noble.....	Lander.....	28,000 00
J. W. Rogers.....	Sundance.....	15,000 00
E. Amoretti & Company.....	Thermopolis	10,000 00
W. A. Denecke & Company.....	Casper	5,016 66
Richards, Cunningham & Company.....	Casper	5,000 00
Frank Brothers.....	Sundance.....	5,000 00
Stewart Brothers.....	Wheatland.....	5,000 00
Richards & Callandar.....	Lusk.....	2,500 00
Clock & Johnston.....	Grand Encampment.....	

In addition to the banks above named, whose transactions are mainly for commercial purposes, there have been established in all of the larger towns building and loan associations, and in all of the towns of the state real estate loans are made both by local building and loan associations and by foreign associations of the same character, and also negotiated through the medium of real estate brokers.

Interest rates on improved real estate, whether town or ranch lands, range from 6 to 10 per cent.



VINEYARD, WYOMING.

HORTICULTURE.

BY BURT. C. BUFFUM, M. S.,

Professor of Agriculture and Horticulture, University of
Wyoming.

Horticulture includes vegetable growing, fruit raising and ornamental planting. Near our larger towns and cities some market gardening is done, and some fruits are produced, but, as a rule, not enough attention has been given these industries to furnish the home market, and large amounts are shipped in to supply the demand. This is due to the fact that we are now in the transition period between the great stock grazing industry and a new regime of diversified agriculture. This newness offers advantages to the prospective settler not found elsewhere.

VEGETABLES.—As a general indication of what may be done in raising vegetables in our state, I would point out the fact that, at altitudes of five thousand feet and less, sweet potatoes and peanuts have been successfully produced. A good quality of leaf tobacco has been raised at Wheatland. Up to altitudes five thousand five hundred feet, such tender crops as tomatoes, melons, pumpkins and squashes grow to perfection, while in all portions of the state are raised enormous crops of onions, potatoes, beets, turnips, cabbage, cauliflower, salsify, rhubarb, celery, and like hardy vegetables. In 1894 the Experiment Station at Laramie recorded an average yield of over fifteen tons of onions from sets, giving a net profit of \$90.41 per acre. The better varieties of seed onions gave maximum yields in different portions of the state of from twenty to over forty-six tons per acre. Maximum yields of turnips were upwards of forty tons; carrots, ten and a half tons, and potatoes, five hundred and twenty-two bushels per acre.

In productiveness, size and quality, our garden vegetables can successfully compete with like kinds raised anywhere.

FRUIT GROWING.—The friction of starting is greater than the friction of movement. While we have no very extensive fruit farms as yet, enough has been done to indicate what is possible and to demonstrate that there is no irrigated agri-

cultural land in the state which will not produce profitable crops of some kinds of fruits. The planting of fruits, which was begun on a small scale but a few years ago, is rapidly growing in favor. I know of no branch of agriculture which is advancing with more rapid strides than that of fruit growing. At the present rate of increase, our production of fruits for home consumption will soon be of great importance to the state. It must be remembered that Wyoming still belongs to the newer part of the west, and much of our industry is such as is still making use of materials already on hand, rather than forcing the soil to produce artificially. The establishment of irrigated farms and the greater production of diversified agriculture marks the dawn of a true and lasting prosperity. Our first farming was naturally such as furnished an increased amount of food for live stock and the more staple farm crops. Fresh, ripe fruits (distinguished from the dried and tin-can varieties), which have indeed been rare luxuries upon our scattered ranches, are rapidly becoming necessities in progressive homes. The regime of the wandering hunter and trapper, the shifting pioneer population, and the nomadic stockman has passed, and our population is made up of a happy, contented, home-building people, surrounding themselves with comforts and luxuries and providing for the comfort of generations to come. Our agriculture and horticulture are becoming permanent and staple. The soil fertility is being kept up rather than merely taking from it all its great natural wealth of plant food. Fruit plantings are lasting and will yield their returns through future years. With irrigation and the intelligent use of improved farm methods, our crop yields are above the ordinary, the quality of the produce is unexcelled, and years of failure are so rare as not to be taken into account at all.

GENERAL CONDITIONS.—Our conditions of soil, climate and exposure are exceedingly various. In a few localities, where the annual rainfall is greater than fifteen inches, or where the lands are underlaid with surface water, at no great depth, fair crops are raised without irrigation. We have agricultural lands at altitudes of less than three thousand five hundred feet, and from this to over seven thousand feet above sea level. There are wind-swept plains, rolling uplands, protected mountain valleys, and bottoms along streams with corresponding lengths of growing seasons free from frost of from eighty days or less, to more than one hundred and fifty days, and the mean annual temperature varies from forty degrees F. to about fifty degrees F. On account of these widely varying condi-



WEALTHY APPLES, WYOMING, 1897—Natural Size.



tions, the fruits raised, the place they are to be planted, the methods of treating them, must be decided largely by each person for himself. There is a wide range of kinds and varieties from which to choose that will succeed in this latitude, and the success with which certain kinds have been grown in the different parts of the state will aid in making the choice.

WHAT HAS BEEN DONE.—The most extensive fruit trials of which we have authentic records are those made upon the several experiment farms in different portions of the state. In addition to these trials, however, are the important results obtained by our farmers and ranchmen themselves, who have been producing fruits for a number of years. We now have bearing orchards in Fremont, Sheridan and Laramie counties, and more scattered trees fruiting in nearly every section of the state. So far as we can learn, the first trees were set out from 1882 to 1885. The first planting were made upon the experiment farms in 1892. Russian apricots and some varieties of pears have produced thrifty trees and seem hardy, though they have not yet fruited.

APPLES.—The hardy varieties of apples succeed in all parts of the state. Mr. Jacob Lund has successfully fruited the Wealthy apple at about seven thousand four hundred feet altitude on the Laramie plains. Several varieties of crabs are also being raised above seven thousand feet. Mr. J. S. Meyer and Mr. Edward Young, in Fremont county, have produced large amounts of fruit from their orchards every season for the last seven or eight years. The principal varieties which have succeeded with them are the Wealthy, Duchess of Oldenburg, Yellow Transparent, Briar Sweetcrab, Transcendant Crab, Great Lakes Siberian Crab, Martha Crab, Soulard Crab and Montreal Beauty Crab. The Ben Davis also fruited upon the Lander Experiment Farm. In Sheridan county, Mr. C. H. Marning has a large bearing orchard, consisting principally of the following varieties: Yellow Transparent, Antonovka, Tetofsky, Moscow, Enormous, Hibernial, Wealthy, McMahon, Switzer, Plum Cider, Red Astrachan, Wolf River and Gideon. He states he has had good crops every year since the trees were old enough to bear, with the single exception of 1892, and that all these varieties are hardy except the Plum Cider.

In Laramie county the Ben Davis, Oldenburg, Pippin, Wealthy and Northern Spy, as well as a number of varieties of crabs, are bearing. We have no accurate data of the yields obtained from apples other than that they have borne full crops and that years of failure are very rare.

PLUMS.—The native wild plum is found over the larger portion of the state. The best cultivated sorts tried are the De Soto, Weaver, Hawk-eye, Wolf and Roling Stone varieties, all of which have borne fruit.

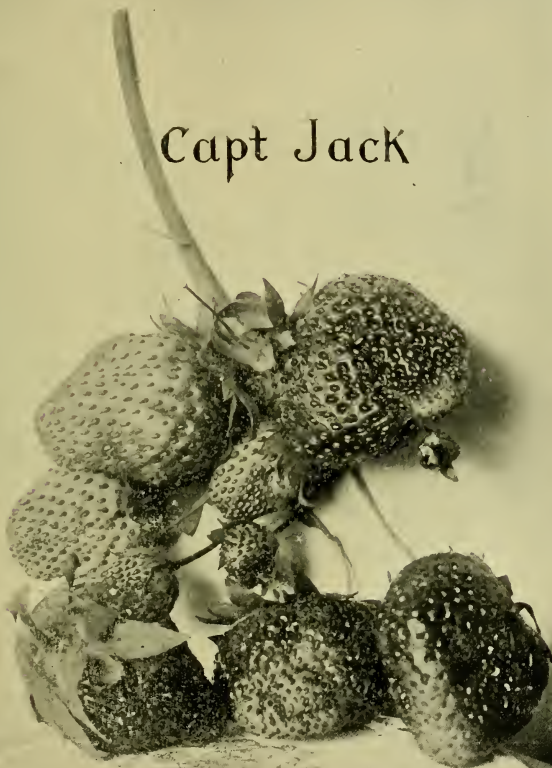
CHERRIES.—The best varieties are the English Morello, Early Richmond and Dwarf Rocky Mountain. They evidently will succeed in all parts of the state, and the last named is especially prolific. Mr. G. W. Barlow of Sheridan estimates that his Dwarf Rocky Mountain cherries, set eight by ten feet, yielded an average of eight quarts per plant, which would be 4 356 quarts per acre.

SMALL FRUITS.—The strawberry is the most cosmopolitan of all fruits, and it seems to succeed under all our conditions if properly cared for. Some varieties succeed better than others under local conditions, but a few standard sorts, such as Crescent, Wilson, Jucunda, Captain Jack, etc., seem to adapt themselves to widely different conditions. The best variety for any locality must be determined by experiment. The following tables of results with strawberries at Sheridan, in 1896, and at Lander in 1897, give information in regard to yields, season, earliness, character of plants and berries, etc., of the varieties which have been tried in those places:

STRAWBERRIES, SHERIDAN, 1896.

Variety	Date in bloom	Date frosted	Character of plant	Date first ripe	Date last ripe	Shipping qualities	Yield per acre, qu'ts
Hart's Minnesota	May 22	May 20	Large	June 20	July 13	Good	7,480
Jessie	" 29	" 20	"	" 23	" 13	"	3,740
Mitchel's Early	" 20	" 20	Thrifty	" 20	"	"	None
Miner's Prolific	" 25	None	Small	" 28	July 13	Good	3,740
Crescent	" 26	"	Large	" 20	" 13	"	6,035
Old Ironclad	" 24	"	"	" 22	" 13	"	6,455
Manchester	" 28	"	"	" 28	" 16	Good	5,610
Lady Rusk	" 19	May 20	"	None	"	"	None
Bidwell	" 19	" 20	Very tender	"	"	"	None
Cumberland	" 25	None	Large	June 20	"	Good	7,480
Crawford's No. 1	None	"	Small, poor	None	"	"	None
Sharpless	May 26	"	Large	June 25	July 13	"	7,905
Capt. Jack	" 26	"	Short, stocky	" 24	" 13	Good	9,350
Bubach	" 30	"	Large	" 24	" 12	"	6,033
Gandy	" 27	"	"	" 23	" 14	"	9,350
Eureka	" 23	"	Weak	" 21	" 13	"	7,480
Haverland	" 23	"	Large	" 21	" 13	"	8,415
Monmouth	" 23	"	" tender	" 20	" 6	Good	9,350
Wilson	" 24	"	"	" 23	" 8	"	7,480
Warfield	" 27	"	"	" 28	" 13	"	8,415
Nectar	" 27	"	Small	" 26	" 6	Poor	1,870
Gold	" 27	"	"	July 1	" 10	"	2,805
Price of Berries	" 26	"	Large	June 22	" 13	"	11,220
Pine Apple	" 25	"	Small, tender	" 20	" 9	"	4,165
Parker Earl	" 23	"	Small	" 20	" 9	"	5,610
Crimson Cluster	" 26	"	Large	" 23	" 12	"	7,480
Stayman's No. 1	" 25	"	Large, tender	" 20	" 13	"	9,350
Shuster's Gem	" 26	May 20	Large	" 23	" 19	Good	5,610
Iowa Beauty	" 27	" 20	Short	" 24	" 15	"	6,885
Viola	" 25	" 20	Small	" 26	" 10	Poor	6,035
Lovett's Early	" 24	" 20	Tall	" 28	" 13	"	7,480
Edgar Queen	" 24	" 20	Short	" 28	" 16	"	10,285
Florence	" 30	" 20	Small	" 28	" 14	Poor	5,610
Jacunda Impr'v'd	" 26	" 20	Very short	" 23	" 17	Good	11,645
Yale	" 31	" 20	Tall, tender	" 30	" 9	"	4,165

Capt Jack





CHARLES DOWNING STRAWBERRY, WYOMING, 1897. Natural Size.

STRAWBERRIES, LANDER, 1897.

VARIETY.	Date in Bloom	Date first ripe	Date last ripe	Weight largest 12 oz.	Diam. ins. largest	Shipping qualities	Yield qts per acre
Mitchell's Early.	May 8	June 12	June 22	...	Small	Good	2,784
Crescent	" 8	" 12	July 9	3	2 1-16	Fair	5,699
Chas Downing	" 12	" 15	" 9	3	1 8	Good	2,848
Jessie	" 12	" 14	" 9	3	1 8	"	4,361
Bubach	" 15	" 16	" 9	2 1/2	1	"	4,154
Lovett's Early	" 8	" 12	" 9	2 1/2	1	Fair	4,516
Stephens	" 15	" 15	" 4	2	3 4	Medium	2,179
Capt. Jack	" 15	" 15	" 6	2 1/2	1	Good	5,555
Jacunda	" 12	" 15	" 9	3	1 8	Poor	2,976
Sharpless	" 12	" 14	" 9	3	1 8	Good	4,640
Crimson Cluster	" 12	" 15	" 9	2	7 8	"	4,750
Bidwell	" 15	" 15	" 6	2	5 8	"	3,735
Cloud	" 15	" 16	June 28	1 1/2	3 4	Medium	.....
Parker Earl	" 12	" 14	July 4	2	3 4	Poor	3,568
Edgar Queen	" 12	" 14	" 9	2 1/2	1	Good	4,230
Perry	" 15	" 16	" 6	1 2	1 8	Poor	870

Currants and gooseberries succeed in all parts of the state, if given half a chance, though gooseberries do not seem to do as well at high altitudes as currants. Mr. James King has raised some fine crops of Red Cherry and White Grape currants upon the Laramie plains. These varieties and the Crandall, which is the finest black sort, are the best of the varieties which have been tried for all parts of the state. At Wheatland, White Grape yielded at the rate of 9,075 pounds per acre, Red Cherry 14,520 pounds and Crandall, 32,670 pounds. The following table gives the results with currants at Sheridan in 1895 and 1896:

CURRANTS, SHERIDAN, 1895.

VARIETY.	Date of Bloom	Date first ripe	Yield per acre Gallons
Red Cherry	May 1	July 25	2,120
Fay's Red	" 12	" 20	.....
Ruby	" 12	" 20	.....
Crandall	" 10	" 20	3,360
Lee's Prolific	" 7	" 28	2,290
White Grape	" 5	" 25	3,120

CURRANTS, SHERIDAN, 1896.

VARIETY.	Date of Bloom	Date first ripe	Date of Pickings.	Yield per acre, Gallons.
Red Cherry	May 12	July 1	July 2 to 20	1,900
Fay's Red	" 12	" 1	" 7 to 20	570
Ruby	" 10	" 7	" 1 to 20	.....
Crandall	" 6	" 20	" 20 to 30	1,995
Lee's Prolific	" 10	" 6	" 15 to 20	1,567
White Grape	" 14	" 6	" 7 to 20	644

At Lander, White Grape currants yielded at the rate of 11,570 quarts per acre, and Red Cherry, 7,260 quarts.

The best varieties of gooseberries are the Downing and the Houghton. The Industry has also given excellent results at Sheridan. At Wheatland, the Downing yielded at the rate of 21,780 pounds per acre, and the Houghton at the rate of 16,335 pounds per acre. Downing gooseberries at Lander yielded 13,159 quarts per acre.

The following tables give the results with gooseberries at

GOOSEBERRIES, SHERIDAN, 1895

VARIETY.	Date of Bloom	Date first ripe	Yield per acre Gallons
Industry	May 1	July 20	600
Downing	" 2	" 10	1,800
Houghton	" 7	" 20	1,500
Golden Prolific..	" 4	.....	.....

GOOSEBERRIES, SHERIDAN, 1896.

VARIETY.	Date of Bloom	Date first ripe	Date of Pickings.	Yield per acre Gals
Industry	May 10	Aug. 1	Aug. 1 to 30	2,775
Downing	" 13	July 20	July 20 to Aug 30	3,800
Houghton	" 14	Aug. 5	Aug. 5 to 25	2,385
Golden Prolific ..	" 14	" 10	.....	.....

BLACKBERRIES AND DEWBERRIES.—The dewberries seem to succeed better than the ordinary blackberries at high altitudes. The canes of blackberries and dewberries, as well as those of raspberries, must be covered with earth for winter protection. The Early King seems to be the best variety of blackberries tried. It yielded at the rate of 9,525 pounds per acre at Wheatland. This variety was the most prolific at Lander, also. The seasons of ripening of and yields of blackberries and dewberries at Lander, in 1895, are given in the table below:

BLACKBERRIES, LANDER, 1895

VARIETY.	In Bloom	First Ripe	Last picked	Yield per. acre, qts.
Early King	June 12	July 24	Sept. 25	1,278
Wilson Jr.	" 22	Aug. 14	" 7	524
Stone's Hardy	July 4	" 25	" 7	1,118

INDUSTRY GOOSEBERRIES, WYOMING.







WHITE GRAPE CURRANT, WYOMING, 1897.

DEWBERRIES, LANDER, 1895.

VARIETY.	In Bloom	First Ripe	Last picked	Yield per acre, qts.
Mammoth	June 22	Aug. 3	Sept. 5	2,023
Lucretia	" 22	" 5	" 5	1,231

RASPBERRIES have succeeded somewhat better than blackberries. At Wheatland, Thompson's Early Prolific, which did better than any other kind, yielded at the rate of 6,808 pounds per acre. At Sheridan, the raspberries gave large crops each year, but the varieties were somewhat mixed, so comparative results are not of great value. The table below gives the yields, etc., of the varieties grown at Lander in 1895:

RASPBERRIES, LANDER, 1895.

VARIETY.	In Bloom	First ripe	Last picked.	Yield per acre, quarts
Red—				
Brandywine	June 22	July 20	Aug. 21	1,605
Marlboro	" 12	" 8	" 17	1,746
Early Prolific	" 12	" 6	" 17	3,280
Hansel	" 12	" 8	" 21	2,250
Turner	" 15	" 13	" 17	3,160
Black—				
Ada	" 25	" 25	" 21	1,815
Clegg	" 24	" 24	" 21	876
Progress	" 15	" 15	" 21	2,674
Kansas	" 16	" 18	" 17	2,428
Lovett	" 20	" 20	" 7	1,705
Yellow—				
Golden Queen	" 7	" 7	Sept 7	3,-31
Caroline	" 7	" 10	"	1,149

GRAPES will probably not succeed much above 5,500 feet altitude, unless they can be given more than ordinary protection. Some varieties have been fruited at Sheridan, and the early varieties planted at Lander have made excellent growth and are now producing fine crops. The Wyoming Red and Concord have been the heaviest yielders, and have shown that they will ripen before early frosts. Grapes merit more extended trial, especially in sheltered localities.

RAISING FRUITS FOR MARKET.—Undoubtdly for some time to come the home demand will be greater than the supply. This gives the Wyoming fruit grower a decided advantage over growers in old, well established fruit belts. He will not need to place his fruits in competition with those in the general market, and the expense of shipping precludes serious competition from growers in other states in any kinds of fruits which he can successfully raise at home. He can

supply his own home much cheaper than he can buy inferior products from elsewhere, and all his surplus will find ready sale in home markets. This can all be sold in the fresh state, so he need look after no secondary products as dried, or canned goods, cider, etc. At present all these fresh fruits demand the best of prices, in fact such prices as insure large profits where they are properly handled and marketed. At present nearly all our fresh fruits come from other states, and I know of one town which consumes large quantities of strawberries not only shipped, in from another state, but carried over one hundred and forty miles of dusty road by stage. This happens in the face of the fact which has been demonstrated, that they can be raised easily and cheaply at home. With the growth of our cities, and the development of our great mineral resources, the demand will steadily increase.

COST AND PROFIT WITH FRUIT.—We are still sufficiently utilitarian to look upon the cash side of every proposition, and it is necessary to show the prospective fruit grower what may be expected in expenditures and returns. It is not possible to state the money value of the higher living and increased health which come along with greater fresh fruit consumption in the home, and the greater independence of producing it ourselves, but we have estimated the money value at the local market prices and the expense under local conditions of producing and marketing strawberries, raspberries and dwarf cherries as follows: We give average yields, the lowest market price, and the greatest probable expense of raising the crop in each case.

Average yield per acre of thirty-one varieties at Sheridan, 1896, 6,920 quarts.

Value at ten cents per quart, local market.....\$692.00

Total cost of plants, setting out new beds each year,
cultivation, irrigation, picking, boxing, crating and
marketing, per acre.... 301.60

Net profit per acre.....\$390.40

RASPBERRIES.

Average yield from all varieties grown at Sheridan for two years, 953 quarts.

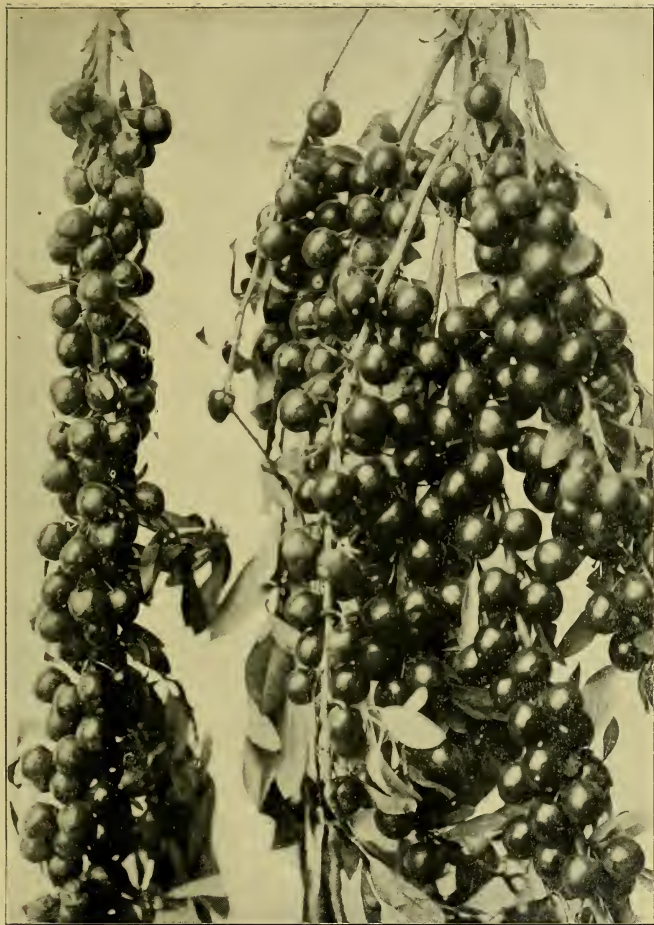
Value per acre at local market price at twenty-five cents
per quart\$238.25

Total cost of raising, picking and marketing, per acre.. 65.65

Net profit per acre\$172.60



BLACKBERRIES, WYOMING.



DWARF ROCKY MOUNTAIN CHERRIES, WYOMING.

DWARF CHERRIES.

Mr. Barlow of Sheridan estimates an average yield of the Dwarf Rocky Mountain cherry of eight quarts per plant, when set eight by ten feet apart. This would give a yield per acre of 4,356 quarts.

Five cents per quart would be a very low price for the fruit, giving a value of the crop, per acre, of.....	\$217.80
Although picking, boxing and crating would cost less, we give the cost of raising and marketing the crop the same as for raspberries	65.65

Net profit per acre.....	\$152.15
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FRUIT GROWING WITH VS. WITHOUT IRRIGATION.—While much has been said of the advantages of farming under irrigation over those in pluvial districts, these advantages are not appreciated as they should be. We only hear of the disadvantages of raising crops by irrigation from those who are unacquainted with it in actual practice. Many who barely exist upon irrigated farms cannot understand how the additional expense of applying water is to be met, and it could not be if an increased crop production did not more than pay all the added expense. Those who have farmed under good irrigation systems would be loth to return to rainfall conditions and take the years of failure, or the lower yields, with good grace. Professor Hilgard has pointed out that the greatest of ancient civilizations in India, Egypt and America have been in arid climates under irrigation. The greater advantages are, first, there is no timber to be removed in order to clear and prepare the land; second, the soils of arid regions have retained all their mineral plant foods, and are proportionately vastly richer than soils which have been washed out by great amounts of rainfall; and, third, crops may be supplied with water just when they need it, instead of depending upon uncertain showers. These and other advantages of the artificial application of water to crops cannot be too strongly urged. The value of irrigation in fruit raising is more apparent, even, than for other crops.

Late frosts, which would be destructive to fruit buds and flowers, may be quite effectually prevented by keeping the ground well soaked, and water in the furrows on nights when there is danger of frost.

The irrigated orchard bears its full crop of fruit every year, instead of resting every other season, or two seasons out of three. The quality of the crop is improved by the application of water just when it is needed, and in our dry climate there is little danger of too much water being forced on the plants during the fruiting season. Naturally the quality is improved, as well by the large amount of sunshine which gives it the highest colors and materially aids in the ripening and sweetening process. We believe, also, that our dry air and large amount of sunshine tend to prevent many fungus diseases. For example, mildew has been unknown with us up to the present time.

In good irrigation practice, the soil fertility is never lessened by leaching. In fact, fertility is conserved to the greatest possible extent, and some irrigation waters actually add plant foods to the soil. It has been demonstrated that water carrying quantities of sediment adds to the total amount of plant food in the soil regardless of the crops removed each year. In such places artificial fertilizers will never be needed, while the production may be as constant as in the famous valley of the Nile.

After all, the greatest factor in successful crop production is the correct amount of water in the soil. Too little or too much water interferes with the growth of the plant, directly and indirectly. Directly by its physiological effect upon the health of the plant, and indirectly by modifying the soil tilth and fertility. A great evil in this state is irrigating too much, which is detrimental to the soil and injurious, to a marked extent, with many kinds of fruit. Too much water may injure the trees and plants, and keeping them too wet during fruiting lowers the quality of the fruit. Such faults are only due to lack of knowledge or carelessness in the irrigation. The time of irrigation, when the soil and plants are in need of water, and the amount to be applied, along with the best methods of applying it, are matters, the correct solution of which, require careful and intelligent thought and study of every fruit grower. They must be determined largely by each individual, for the conditions of soil and climate in his locality.



RED CHERRY CURRANT, WYOMING, 1897

Wages and Cost of Living.

The conditions regulating the demand and supply of labor in Wyoming are about normal. There is a more than usual demand for skilled mechanics and house servants.

The question of the cost of living and maintaining a family in Wyoming, as compared with other states in the west, is one worthy of consideration. While wages have been but slightly decreased, the cost of living has been greatly reduced. Wages are from 30 to 50 per cent higher than in any of the eastern states, while the cost of living is but from 20 to 30 per cent greater along the lines of railway, and not appreciable higher in the interior.

Below is given a table of approximate wages in the state at this time:

OCCUPATION.	WAGES.	OCCUPATION.	WAGES.
Carpenters.....per day\$	2.00 to 3.50	Agents and op-	
Machinists..... do	3.00 to 5.00	erators.....; per mo.	\$50 to 115
Painters..... do	2.50 to 3.50	Horse wranglers,	
Tinners..... do	3.00 to 3.50	with board..... do	20 to 40
Stone-cutters..... do	3.00 to 5.00	Farm hands, with	
Plasterers..... do	3.00 to 3.50	board..... do	20 to 35
Roustabouts..... do	1.50 to 2.00	Sheepherders, with	
Miners..... do	3.00 to 3.50	board..... do	35 to 70
Brick-layers..... do	4.00 to 5.00	Teamsters, with	
Shoe-makers..... do	2.50 to 3.50	board..... do	20 to 40
Gas-fitters..... do	3.00 to 4.00	Cooks, with board... do	20 to 50
Day Laborers..... do	1.50 to 2.00	House servants, men,	
Upholsterers..... do	2.50 to 3.50	with board..... do	20 to 35
Cabinet makers... do	2.50 to 3.50	House servants, wo-	
Plumbers..... do	2.50 to 5.00	men, with board.. do	12 to 35
Tailors..... do	2.50 to 3.50	Railroad brakemen,	
Bakers..... do	2.00 to 3.00	without board.... do	50 to 80
Railroad trackmen do	1.50 to 1.60	Butchers, with board. do	50 to 75
Plasterers and		Lumbermen, with	
masons' helpers. do	2.00	board..... do	35 to 40
Coal-miners.....per mo.	35.00 to 75.00	Conductors..... do	85 to 135
Engineers..... do	75.00 to 125.00	Locomotive firemen. do	65 to 100
Cow-boys, with			
board..... do	25.00 to 50.00		

COST OF LIVING.—The following are about the retail prices, at distributing points in Wyoming, of staple articles:

Flour, first grade, Colorado.....	per cwt.	\$ 2.25		
Flour, first grade, Nebraska.....	do	3.75		
Flour, second grade, Nebraska.....	do	2.50	to	\$ 3.00
Potatoes.....	do	.75	to	1.60
Beef.....	do	6.00	to	8.00
Mutton.....	do	6.00	to	8.00
Veal.....	do	10.00	to	12.00
Bacon.....	per pound.	.10	to	.12
Lard, grocers'.....	do	.08	to	.10
Chickens.....	do	.18	to	.20
Turkeys.....	do	.18	to	.25
Wheat.....	per cwt.	1.50	to	1.75
Corn, cracked, Nebraska.....	do	1.00	to	1.50
Oats.....	do	1.00	to	1.50
Corn meal.....	do	1.50	to	2.00
Sugar, granulated.....	do	6.25	to	8.00
Salt, Liverpool.....	do	1.50	to	3.00
Kerosene.....	per gal.	.20	to	.30
Coal.....	per ton.	2.50	to	6.00
Hay:				
In town.....	do	8.00	to	10.00
On ranches.....	do	2.50	to	7.00
Lumber:				
Native rough.....	per m.	16.00	to	20.00
First quality, planed.....	do			40.00
California or Oregon, best.....	do	20.00	to	30.00
Shingles:				
Native.....	do	2.50	to	3.00
Oregon.....	do	2.75	to	4.00
Wood, native Pine.....	per cord.	5.00	to	6.00
Coal.....	per ton.	6.00	to	10.00

Clothing, dry goods and other articles easily transported and bearing light freight charges are but slightly higher in price than in eastern and middle states.





CAPITOL BUILDING.

PUBLIC BUILDINGS.

Prior to the year 1886, the territory owned no public buildings. The Ninth Legislative Assembly passed an act, providing for the erection of a Capitol building at Cheyenne, a University at Laramie, a Hospital for the treatment of the insane at Evanston, and an institution for the education of the deaf and dumb at Cheyenne. In 1888 the Tenth Legislature provided for the erection of a State Penitentiary at Rawlins, and in 1893 the State Legislature authorized the erection of the Wyoming General Hospital at Rock Springs.

THE CAPITOL.—The Capitol building at Cheyenne is purely classical in style, bearing a resemblance in general outline to the Capitol at Washington. Its entire length and breadth, exclusive of the broad stone steps leading from the building on three sides, is 216x112 feet, while the dome, with a diameter of thirty feet at its base, rises to a height of 155 feet. The main entrance, facing the south, is ornamented by a broad portico, surmounted by two groups of Corinthian columns, above which is a cornice and gable elaborately carved and beautifully finished. The principal material used in the construction of the building is a superior quality of gray sandstone, procured from quarries in the vicinity of Rawlins, Carbon county. The building has some sixty apartments, furnishing ample room for all legislative, judicial and executive departments and the State Library. It is heated throughout by hot air furnaces and gas heaters, and is lighted by gas and electricity. The total cost of construction was \$292,298.85, but the additional sum of \$6,854.64 has been expended in improving and beautifying the grounds.

WYOMING UNIVERSITY.—The Wyoming University is located at Laramie, and has been in successful operation since 1887. It is supported by an annual levy of one-eighth of a mill on all the taxable property in the state and has also received a valuable land grant of 46,091.34 acres from the general Government, the rental from which also goes toward the maintenance of the institution. It has an able and efficient faculty, of which Dr. Elmer E. Smiley is President. The attendance is

nearly two hundred, and rapidly increasing. The institution affords a liberal education free to the youth of both sexes. The main building is one of the handsomest structures in the state, constructed of a grayish colored sandstone, obtained near the city of Laramie. It is four stories in height, one hundred and fifty-seven feet in length by seventy-one feet in width, and is heated by steam and lighted by electricity. Mechanical Hall and other buildings are of the same material. The facilities for obtaining an education in this institution are second to none, and while older and larger colleges and universities may have more means at their command, there is no institution of learning in the land where a more thorough and practical educational training is given the youth of the country than at this university. Boarding clubs, under the care of some member of the faculty, have been organized, where the boys and men attending the university are accommodated with good, wholesome cooking for the moderate sum of eleven dollars per month. Suitable homes, with excellent families, are obtained for girl students, and every member of the faculty takes a personal interest in the welfare of the students who are committed to their charge.

FISH HATCHERY.—The Wyoming Fish Hatchery is situated about five miles east of Laramie, and consists of suitable buildings and proper apparatus for propagating and caring for young fish fry. The buildings are grouped around artificial ponds, which draw their water supply from large springs in the vicinity, and the institution has a capacity of 500,000 fry annually. Since the establishment of the hatchery, in 1884, there have been distributed to the several counties of the state, 6,000,000 trout, as well as fry of other varieties of game fish. During the year 1897, the total distribution amounted to 444,000 fry distributed among the several counties, as follows:

Albany	90,000
Carbon	41,000
Converse	60,000
Crook	15,000
Fremont	30,000
Johrson	15,000
Laramie	90,000
Natrona	60,000
Sheridan	25,000
Sweetwater	18,000
Total	444,000

There are also branch hatcheries located in Sheridan and Crook counties.

WYOMING PENITENTIARY.—Wyoming has two penitentiaries, one situated at Laramie, and one at Rawlins. The penitentiary at Laramie was formerly owned by the Government, but was transferred to the state upon the admission of Wyoming to the sisterhood of states. It is capable of accommodating from one hundred and seventy-five to one hundred and ninety inmates. The penitentiary at Rawlins has not, up to this time, been occupied, owing to the fact that it is not quite completed. It is constructed of the fine sandstone found near the town of Rawlins, and there has been expended in its erection, up to the present date, the sum of \$98,352.99.

POOR FARM.—Wyoming is in possession of a Poor Farm, situated at the town of Lander, which cost \$5,053.39. Owing to the fact that the state has no poor, the farm has been rented, and the proceeds applied to its improvement, so far as necessary, and the remainder allowed to accumulate as a fund for future use.

DEAF, DUMB AND BLIND.—An asylum for the education of the deaf, dumb and blind was erected some eight or ten years ago at the city of Cheyenne, but owing to the small number of pupils seeking admission to the same, they were provided for in other institutions, and the building turned over to the veterans of the late war, to be used as a soldiers' home, and its commodious quarters now furnish a pleasant home for about twenty-five men, who are dependent upon the state for support in their declining years. There has been expended upon this building the sum of \$11,879.05.

INSANE ASYLUM.—The Wyoming State Hospital for the Insane was erected in the town of Evanston and opened for inmates in the year 1888. It cost the sum of \$66,667.66. It is under the care of a competent physician, and has been one of the most successful institutions in the state in compassing the ends for which it was erected.

HOSPITAL.—The Wyoming General Hospital was built in the city of Rock Springs during the years 1893-4, at a cost of \$28,204.64, but it was destroyed by fire in the month of January, 1897, and rebuilt during the same year. It is modern in its arrangement and equipment, is under the supervision of competent surgical authority, and is so located as to be of great value to the mining population of the state in times of emergency.

WYOMING INDIANS.

BY JOSEPH A. BRECKONS.

The past decade has witnessed a marvelous change for the better in the habits, condition of life, education and material condition of the Indians, in Wyoming.

In 1890, there were, in Wyoming, but forty-three self-supporting Indians among the eighteen hundred or more occupying the Shoshone, or Wind River, reservation. At the present time, fifteen hundred of these Indians are partially and nearly wholly self-supporting. In 1890, the average attendance of Indian children in the agency schools was sixty-five; now it is one hundred and sixty-one. The census report for 1890 recites: "The children go to school with reluctance, and seldom miss an opportunity of absenting themselves, sometimes in large numbers. The old people have little interest in the education of their children." At the present time, the capacity of the agency school is taxed, and the attendance could be increased, if the accommodations were extended. Industrial shops are needed in connection with the school, as the desire on the part of the Indian children to learn some form of work, in connection with their studies is keen. A sewing room for the girls is maintained; a carpenter shop for the boys, and a school farm are in successful operation. The farm of six hundred acres is fenced. During the past year, a crop of eleven acres of oats and barley, seven acres of potatoes, ten acres of onions, cabbage, and other vegetables was raised, and sufficient hay was cut for the use of the school, with considerable to sell. The pupils also maintain a bright, readable paper called The Indian Guide. The parents are now anxious to have their children attend school, and the head men of the two tribes encourage all of their people to have their children educated.

The Shoshone, or Wind River, reservation was established in 1868, by a treaty made at Fort Bridger, by which the Government gave to the Shoshone and Bannock Indians lands,



WASHAKIE, CHIEF OF THE SHOSHONES.

along the valley of the Big Wind river, aggregating in area about 4,500 square miles. When the reservation was created, it was the great hunting ground of the Sioux, Cheyennes, Arapahoes and Crows, the hereditary enemies of the Shoshones. The three tribes first mentioned, except for short periods, had always been allies, so that the Shoshones were unable to contend against them; sometimes they were friends, and sometimes enemies of the Crows, the result being that in the summer, when these tribes were on the buffalo hunt, the Shoshones were compelled to find a home in Utah and Idaho, and were only safe on their reservation in winter. Under these conditions, it was not until 1871 that they began to fully enjoy the provisions of the treaty of 1868. In 1872, the Shoshones quarreled with the Bannocks, and the latter tribe was allowed to depart and select what is now the Fort Hall reservation, in Idaho. In the same year, the place of the Bannocks was taken by the Arapahoes. They were speedily removed and sent to the Pine Ridge agency, where they remained until 1878, when they were again sent to the Wind River reservation and given the southeastern part of it, where they have since remained. The two tribes are entirely separate and rarely intermarry. Up to 1878, they were at war with each other. Since then, they have been apparently friendly, though some jealousy still exists. The last fight in which the Shoshones and Arapahoes were engaged against each other was in 1874, when the Shoshones were the allies of the whites, under Captain Bates, in a fight against the Arapahoes at Bates' Hole. In 1873, the Shoshones showed some interest in farming, but locusts ate their crops for three successive years, and this wholly discouraged them. Hostile tribes constantly raided them and compelled them to spend most of their time guarding their herds of horses. In 1876, under Chief Washakie, they served as scouts and guides for General Crook, in his expedition against their old enemies, the Sioux, and did some effective fighting at the battle of the Rosebud. The condition of the Shoshones is graphically shown by the census report of 1890, which recites: "The Shoshones show a willingness to work when there is any incentive given them, but much can hardly be expected from a half-starved and ignorant people, no matter how willing they may be. They are not only in want of sufficient food, but are in want of almost everything they should have to induce them to work their farms, such as rations, material for fencing, agricultural implements, seeding and farming assistance. The material condition of the Shoshones is easily summed up; they

are as poor as they can be and live." Of the Arapahoes, the report says: "They number 885 souls, and, although fully one-half the men wear citizen's clothes, they are, in civilization, far behind most Indian tribes. They are very intelligent and industrious when they have an opportunity. Their children, at school, are more apt and industrious than the Shoshones, and, as a people, they are of a much higher type mentally and physically. They complain bitterly of the treatment they receive from the Government. They claim they were induced to plant posts and were promised wire, but that they received but little. They complain of a lack of implements and that the Government farmer does not show them how to work. The Arapahoes have reached as high a state of civilization as their present surroundings and opportunities will allow. Black Coal, their chief, said: "I know the time has come when we will have to earn our living by work. I tell my people so, and they believe me. They are willing and anxious to do so, but they have neither the instruction necessary, nor the tools to work with. What shall we do?"

The change for the better, in the condition of these Indians, commenced about five years ago, when the agency was placed in charge of an officer of the United States Army. The Indians were induced to take land in severalty, irrigation ditches were built, many of the Indians gave up their teepees and built comfortable log houses. They were encouraged to raise more crops than sufficed for their own need by the Government's offering to buy the surplus from them, and, in many other practical ways, they were gradually brought into their present encouraging condition. During 1897, the two tribes on the reservation accomplished what, five years ago, pessimists, on the Indian question, would have declared an impossibility. They supplied the entire wood contract for Fort Washakie, the agency and school consisting of 2,075 cords; they put in the entire hay contract, at the fort, amounting to 800,000 pounds; they supplied the agency and fort with 760,000 pounds of oats and the school with 585,000 pounds of wheat, besides having plenty left for seed and extra rations for themselves; they supplied the post contract for potatoes, and had sufficient left for their own needs. During the year they planted more seed than their entire crop amounted to in 1894, and that year was regarded as a remarkable one for the forward steps taken. The Indians run a first-class flouring mill, and with it a feed mill, a saw mill and shingle mill. The work of allotting the lands in severalty has been progressing favorably, and, at the present

time, nearly all of the Indians have taken their allotments. During last year, the Government purchased a tract ten miles square, containing the famous Big Horn Hot Springs from the Indians, paying them the sum of \$60,000. The Shoshones took their half of the purchase money in cash; the Arapahoes took theirs in cattle. When all of the Indians shall have received their land allotments, a large area of the reservation will still remain unused. It is proposed to purchase this from the Indians, and, if this is done, they will be in fair financial circumstances, in addition to each family owning a fine ranch.

The educational improvement has kept pace with the material advancement. New school buildings were erected in 1893, on what is called "neutral ground," that is, upon school sections, lying between the lands of the Shoshones and Arapahoes. Both tribes send about an equal number of children to the school. The buildings have a capacity of two hundred, but the appropriation provides for but one hundred and fifty pupils. During 1897, the enrollment was two hundred and four. There were one hundred and fourteen boys and ninety girls; one hundred and two Arapahoes and one hundred and two Shoshones. The average attendance was one hundred and seventy-four; three times what it was five years ago. The fact that work is the salvation of the Indian is recognized by the school officers. During 1897, the boys of the school tilled the farm, built a barn, a root cellar, a coal house, several miles of fence, printed their paper, *The Indian Guide*, and repaired 2,227 articles of clothing, baked daily two hundred pounds of flour and performed nearly all of the household duties of the school.

The remarkable improvement shown by the Wyoming Indians is due to the efforts of the agents, who have charge of them, during the past five years: Captain P. H. Ray, U. S. A.; Captain Richard H. Wilson, U. S. A., and Captain H. G. Nickerson, of Lander, who have exercised a judicious and unremitting care over their wards. They have been aided effectively by the head chiefs of the two tribes, Washakie of the Shoshones, and Sharp Nose of the Arapahoes. Both of these Indians are famous. Washakie is ninety-five years of age. He has always been the friend of the whites. He was the ally of General Crook, and received the personal thanks of General Grant for his services. He has, by his own example, and by judicious counsel, aided in the work of the agency officers, teachers and missionaries, in civilizing his people. Sharp Nose is over sixty years old. He served as chief of scouts for the

Government against the Cheyennes, 1876, and has commendatory letters from President Garfield, General George Crook, Lieutenant W. P. Clark, U. S. A., and General O. O. Howard. His friendship and aid to schools and civilization received a severe test in 1881, when he sent his son and twelve other Arapahoe children east to school, and all except three died. He is friendly and progressive, and has always taken a stand against the non-progressive element of his tribe. Rev. Sherman Coolidge, a full-blood Arapahoe, whose parents were killed in a fight between the Arapahoes and Bannocks, in 1870—and who was subsequently adopted and educated for the ministry by the wife of Captain C. A. Coolidge, U. S. A.—and Prof. W. P. Campbell, superintendent of the agency school, have also been unremitting and energetic workers towards educating and civilizing the Indians.

EDUCATIONAL ADVANTAGES.

BY ESTELLE REEL,

Superintendent of Public Instruction.

The state of Wyoming is notable for the educational advantages it gives the children of its citizens. In educational matters it leads many of the older states, in that it employs a larger number of teachers in proportion to its population; that its school term is longer; that the salaries paid its teachers, especially those paid women teachers, are higher, and that its school methods are at all times kept in unison and harmony with the latest and best in modern education.

The amount of funds raised in Wyoming for school purposes by voluntary taxation is liberal, and expenditures in educational matters are not stinted. The latest and most approved text-books and school apparatus are in use, and the schools, even in the remote country districts, are well equipped

with reference and general libraries. The result of this liberality and of the careful attention given the schools of the state by its citizens and school officers has resulted in keeping the percentage of illiteracy in Wyoming to a nominal figure. A practical illustration of this was shown at the recent muster of troops in the state for service in the Spanish war. Of one thousand young men who enlisted in Wyoming, not one was unable to sign his name to the muster rolls, and every man had received a fair education.

There are 11,937 pupils enrolled in the public schools of the state. These are in attendance in four hundred and fifty-two schools, an average of twenty-six pupils to each school. Omitting the city schools, the average attendance is ten pupils. Sparsely settled communities in Wyoming enjoy equal school facilities with more thickly settled regions. It is the universal custom in the state to establish a school if five pupils can attend. The result is that practically all children of school age in the state have an opportunity to attend school. A compulsory school law is on the statute books, but it has never been found necessary to enforce it, as school attendance is voluntary.

The number of teachers employed in the state is four hundred and ninety-eight, or one teacher for every twenty-four pupils. The salaries paid teachers in Wyoming average fifty-eight dollars per month for male teachers, and forty-five dollars for female, which, when it is considered that the country schools of the state form the great percentage of the entire number, compare most favorably with salaries paid in other states.

The school buildings in the state are generally well built and comfortable. The cost of construction has been upwards of half a million dollars, while repairs and improvements amounting to ten thousand dollars are made annually. As the sparsely settled communities of the state grow, the primitive log building which at first constitutes the school building, gives place to the neat frame or brick structure with all the modern apparatus for successful educational work. During the past year \$6,211.91 was expended in the state for school apparatus, and \$1,556.97 for school books for the general use of pupils.

Wyoming educators have established uniformity in textbooks and in course of study. The State Superintendent, during the past year, prepared a uniform course of instruction for the graded and ungraded schools of the entire state. This has served to systematize the work of teachers and county superintendents, and has added materially to the effectiveness of the service.

The question of free text-books is well managed in this state, the matter being left to the voluntary action of the districts, a plan which is found to give general satisfaction. A number of the districts purchase text-books and furnish them to pupils at actual cost prices. This plan gives universal satisfaction, and is the inception of ultimate free text-book distribution by the school authorities.

Teachers, County Superintendents and other school officers show a creditable interest in county institute work, which is rewarded by liberal financial aid by county authorities. Each county in the state appropriates annually the sum of one hundred dollars to aid in securing lecturers and instructors for institute work. The expense and inconvenience of travel in Wyoming prevents, to a great degree, holding state educational meetings, although very interesting and valuable gatherings of the State Teachers' association are occasionally held.

One of the most valuable aids to the support and maintenance of the public school system in Wyoming is the fund received annually from the rental of school lands. During the year ending March 31, 1898, the sum of \$12,617.55 was received from this source and distributed to the school officers of each county in proportion to the number of pupils in each. The total acreage of school land in the state which may be utilized for this purpose is 3,600,000 acres. Of this amount, 301,812 acres have been leased. The practice of leasing state and school lands for pasturage and grazing purposes has grown rapidly in Wyoming within the past three years. The state lands, placed at the disposal of the state for the maintenance of state institutions, has practically all been leased, and the demand for school lands will increase from the present time on. It may reasonably be expected that sufficient income will be received from the rental of school lands within the near future to increase the efficiency of the schools of the state to the highest degree, and this without imposing additional burdens upon the tax-payer.

Under these conditions the outlook for the educational future of Wyoming is exceedingly bright, and its schools may be confidently relied upon to send forth thorough, self-reliant, well-equipped young men and women to take their places successfully in the great competition which marks modern life.

Public Schools of Wyoming.

For the Year Ending September 30, 1897.

Counties.	Co. Seat.	Name of County Superintendent.	No. of School Districts.	No. of Schools taught.	No. of Pupils Enrolled.	Teachers.			No. of days taught.	Average Compensation.		Out-standing Bonded Debt.	Cost of School Houses.	No. of vols. in library.	Acres of School Land Leased.				
						No. of days taught.	Male.	Female.		Male.	Female.								
Albany	Laramie	Sarah W. Pease.	25	55	1,352	682	670	133,968	6	53	59	9130	57.50	45.25	\$4.61	\$23,000	45,850 00	500	30,160
Big Horn	Basin City	B. T. Howell	16	22	421	175	246	19,577	10	11	21	1618	46.50	45.00	2 05		2,525 00	16	11,585
Carbon	Rawlins	G. M. Huntington	25	39	1,242	575	667	129,635	9	30	39	2795	61.65	35.50	3 23	23 400	39,912 03	1100	31,572
Converse	Douglas...	C. A. Sherman	15	35	593	302	291	48,901	8	31	39	3380	48.75	40.22	6 17	12 000	20,000 00	442	32,610
Crook	Sundance	Barbara Gunn	14	40	621	298	326	43,008	11	38	52	4220	45.14	31 41	6 21	10 000	11,350 00	18	26,813
Fremont	Lander...	Mary A. Mason.	15	19	517	262	255	45,716	6	18	21	1329	65.00	50.00	3 42	10 000	17,675 25	502	9,630
Johnson	Buffalo...	Cornelia Snider.	6	15	460	233	227	41,600	8	8	16	1913	59.00	50.45	4 86		25,225 00	....	10,280
Laramie	Cheyenne.	Elizabeth Hawes.	12	101	1,852	903	949	198,426	10	98	108	1713	68.50	41.21	5 30	58 500	151,447 95	1400	78,233
Natrona	Casper ..	W. M. Clark	11	11	311	161	150	27,640	2	13	15	1310	47.50	55.00	4 10	3 100	9,802 00	30	20,960
Sw. Water	Green River	Mary A. Clark.	5	16	915	416	469	98,827	3	11	17	2219	71.25	57.50	2 49	12 700	32,150 00	375	1,920
Sheridan	Sheridan	Marion Dillon	25	39	1,037	513	494	99,775	4	35	39	5015	47.25	40.75	2 30	7 315	27,580 00	225	21,709
Uinta	Evansston.	Mary J. Young	13	47	2,215	1078	1,137	108,689	20	36	56	5332	60.72	48.40	3 18	20 000	40,052 72	316	12,710
Weston	Newcastle	E. C. Patterson	3	13	398	212	186	29,536	3	10	13	1368	76.66	39.79	2 55	10 000	10,510 55	133	10,600
			185	452	11,937	5870	6,067	1,085,961	103	385	498	41082	58.10	44.45	\$3.90	\$180 015	437,170 47	5087	301,812

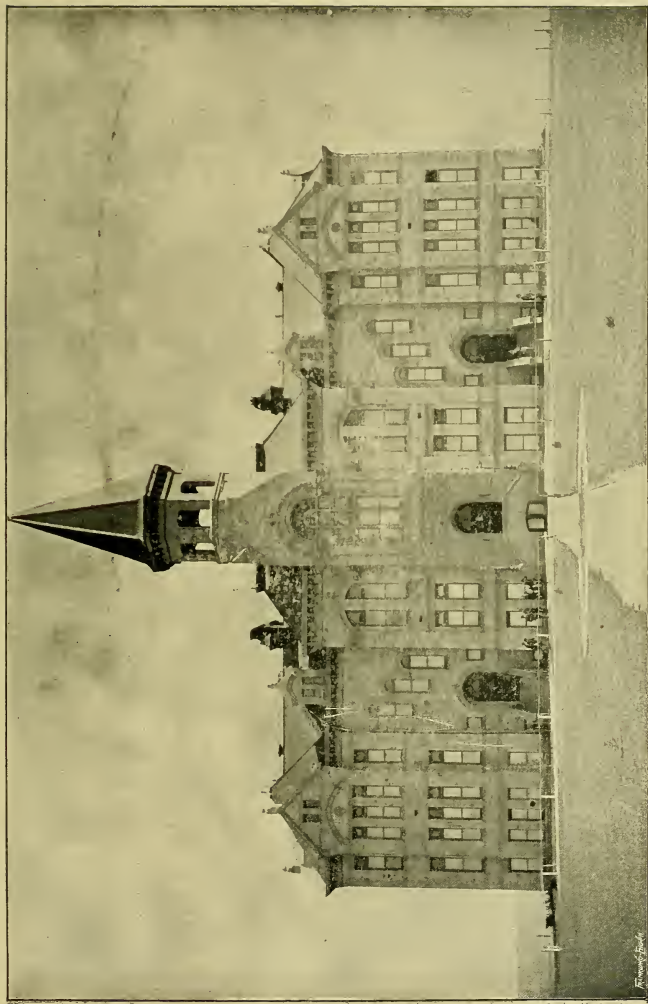
THE STATE UNIVERSITY OF WYOMING.

Wyoming has always been deeply interested in the education of her youth. Even before statehood had been conferred, she had crowned the structure of her public education with a university untrammelled by sectarian control. The foundation of the University of Wyoming was a bill passed by the Ninth Legislature of the territory, which convened January 12, 1886. Under that act the governor appointed a Building Commission, which went promptly to work. The university was opened to students in the fall of 1887, and has been growing in attendance, faculty and equipment ever since.

From the time of opening there has been a College of Liberal Arts and a Preparatory School. In 1891 the departments of Agriculture, Mechanical Engineering and Normal Instruction were expanded into full schools. A School of Mines and a School of Military Science were founded the following year, and a School of Music made its appearance in 1895. Moreover, in all colleges of the university, students of mature years are permitted to pursue, under the direction of the faculty, one or two distinct lines of study. Regular graduate subjects are offered, and several students are working for advanced degrees.

The courses have all been thoroughly revised and are now of equal excellence with those of the best colleges and technical schools in the country. Several alumni of the university have been admitted by large universities to work for higher degrees on the same terms as their own graduates.

Two literary clubs have been organized by the students. Music, essays, readings, a journal, and a debate form part of the program of each meeting of these societies. Another association, where debating is the prominent feature, has also been established. An English club meets once a week with the professor of English for the reading and discussion of English classics. Besides the orchestras connected with the literary societies, the students maintain a brass band, a glee club, and a choral society. A camera club, various scientific societies, and a flourishing athletic association complete the list of student organizations. A University Extension association has been established by the faculty, and the professors are always ready to deliver courses or single lectures without charge.



MAIN BUILDING, UN. VERSITY OF WYOMING.

The Presidents of the University of Wyoming have been John W. Hoyt, M. D., LL. D., 1887-91; Albinus A. Johnson, D. D., 1891-96; Frank P. Graves, Ph. D., LL. D., 1897-98, and Elmer E. Smiley, the present incumbent. The faculty now consists of fifteen members, each of whom has a reputation as a teacher and a scholar. Several professors in the various sciences have published their researches, and are widely known for their brilliant and accurate work.

Although the standard of scholarship has been constantly raised, the number of students has from the first steadily increased, as the following table will show:

STUDENT ATTENDANCE AT UNIVERSITY OF WYOMING.

Year.	President.	No. of Students.
1887-88....	J. W. Hoyt	72
1888-89....	J. W. Hoyt	75
1889-90....	J. W. Hoyt	77
1890-91....	J. W. Hoyt and A. A. Johnson.....	77
1891-92....	A. A. Johnson	120
1892-93....	A. A. Johnson	105
1893-94....	A. A. Johnson	108
1894-95....	A. A. Johnson	106
1895-96....	A. A. Johnson	118
1896-97....	F. P. Graves	160
1897-98....	F. P. Graves	186

It is also estimated that the number of students in 1898-99 will be well over two hundred. A pleasing feature of the increase in attendance is that, whereas, a few years ago only about a dozen students resided outside of Laramie, now every portion of the state is represented, although the number of Laramie students remains as large as ever. The result has been that it is now accepted throughout Wyoming that the university belongs to no particular section, and that every portion of the state should be equally interested in its welfare.

The cost of living in Laramie depends upon the habits of the individual, but is, in most cases, very reasonable. Young men who join the University Boarding Club can bring their entire expenses down to fourteen dollars a month. While the university cannot promise employment to all who desire to earn their own living, those who wish to find work are generally successful, and the President is ready to aid all students in securing work as far as it is possible.

SUFFRAGE QUALIFICATIONS.

Under the Constitution of the state, the right of citizens to vote and hold office cannot be abridged on account of sex, and male and female citizens enjoy equally all civil, political and religious rights and privileges. Before voting, electors must have resided in the state one year, within the county sixty and within the precinct thirty days, and be able to read the State Constitution in the English language, unless unable from physical disability to do so. All balloting is by the Australian system, and elections are invariably quiet and orderly. The question is frequently asked whether the women of the state participate in the elections. A careful compilation of the votes cast on the third of November, 1896, shows that of the total number cast, 33 per cent were cast by women. The right to vote for territorial offices was granted to women December 10, 1869, and the same privilege was incorporated in the State Constitution, with the result that the women of Wyoming today enjoy the same rights of suffrage as do the men, voting for all officers, both federal and state.

CLIMATE OF WYOMING.

BY W. S. PALMER,

Observer United States Weather Bureau at Cheyenne.

In treating of the climate of Wyoming, one must consider the great diversity of the surface of the state. Traversed, as it is, by the main range of the Rocky mountains, as well as by several spurs from this main range, these several ranges enclosing valleys of different altitudes, the climate of the state must be complex, varying, to a certain extent, according to location. The elevation of the habitable portions of the state vary from 3,500 feet to 9,000 feet above sea level. The lowest portion of the state embraces the broad valley lying between the Big Horn mountains on the west and the Black Hills of South Dakota on the west, with an elevation from 3,500 to 5,500 feet, while the Green River valley, which embraces the greater part

of the southwestern portion of the state, has an elevation of from 6,000 to 8,000 feet. Climatic data from the following three stations, situated in different portions of the state, will be considered:

Station.	County.	Elevation.
Cheyenne.....	Laramie....	6,105
Lander.....	Fremont	5,372
Sundance.....	Crook ...	4,700

BAROMETRIC PRESSURE.

The actual pressure for the year 1897, as computed from two daily observations at Cheyenne and Lander, was 24.01 in. and 24.64 in., respectively, this being the pressure felt at the two stations, no elevation correction having been applied to the barometer readings to reduce them to sea level. To reduce these readings to sea level, there would have to be added pressure 6.03 in. and 5.42 in., respectively, these amounts showing the decrease in pressure, due to elevation. The low pressure at these altitudes is very noticeable to persons coming directly from much lower altitudes, but permanent residents experience no discomforts from its effects.

TEMPERATURE.

The high altitude makes the summers comparatively short. The winters are not usually severe, though the state is subject to severe cold waves, yet such are seldom of long duration. The following table gives the mean monthly and mean annual temperature for each station for the past five years:

TEMPERATURE FOR FIVE YEARS.

STATION.	Year ...	January	February	March	April	May	June	July	August	September	October	November	December	Yearly ...
Cheyenne	1893	32.0	25.2	31.9	38.6	48.3	62.2	68.4	64.2	58.2	46.8	34.8	32.8	45.3
Cheyenne	1894	25.4	20.4	33.2	44.0	54.0	61.4	67.7	66.8	56.4	49.2	41.0	27.6	45.6
Cheyenne	1895	24.8	21.8	31.0	46.1	50.6	56.8	63.0	65.2	59.6	44.6	33.4	27.2	43.7
Cheyenne	1896	32.2	30.6	29.4	41.6	51.8	62.8	66.6	66.2	55.0	46.0	30.0	36.4	45.7
Cheyenne	1897	23.8	25.8	29.1	40.0	55.0	59.8	65.0	64.8	61.8	46.4	37.4	25.0	44.5
Lander	1893	26.3	19.2	28.8	37.0	49.0	60.1	67.0	63.8	54.9	43.5	29.6	26.8	42.2
Lander	1894	17.7	12.6	32.0	43.6	54.2	60.0	66.8	66.8	52.9	45.8	36.8	20.3	42.5
Lander	1895	18.4	19.5	31.0	46.2	51.1	56.3	63.6	64.8	54.6	43.2	25.1	18.7	41.0
Lander	1896	24.6	29.2	28.4	39.4	48.9	63.2	68.0	64.8	53.8	43.5	25.0	27.4	43.0
Lander	1897	15.0	23.0	28.6	42.9	57.6	60.2	65.1	64.9	58.2	45.1	34.5	16.0	42.6
Sundance	1893	19.8	...	21.5	35.2	48.6	62.1	69.0	66.2	57.7	41.8	27.6	23.8	...
Sundance	1894	13.0	13.8	26.6	42.2	54.0	...	66.7	68.8	54.2	44.9	33.6	26.7	...
Sundance	1895	17.7	14.8	27.0	45.7	48.6	55.6	64.4	64.6	55.4	43.9	28.0	21.8	40.6
Sundance	1896	23.0	26.0	24.3	40.0	51.8	62.6	67.2	66.6	51.9	43.0	18.1	31.0	42.1
Sundance	1897	16.9	19.2	21.3	39.9	54.5	58.1	64.6	63.6	63.7	45.4	26.0	18.8	41.0

The maximum and minimum temperature for each month, as given in the following table, will serve to show the range of temperature in the different parts of the state:

RANGE OF TEMPERATURE.

STATION.	January		February..		March.....		April.....		May.		June		July.....		August....		September		October....		November		December.	
	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..	Max.	Min..
Cheyenne	56	21	52	5	62	0	71	13	79	28	86	36	92	40	88	41	86	32	75	20	72	5	52	—6
Cheyenne	40	29	40	10	42	17	66	11	77	23	83	33	89	32	88	37	81	26	72	14	59	1	37	19
Fort Yellowstone . Max.																								
Fort Yellowstone . Min..																								
Four Bear	58	25	46	11	57	21	72	2	74	26	83	29	89	32	88	33	83	25	75	6	68	1	52	19
Four Bear																								
Lander	55	15	51	4	61	8	76	13	82	29	88	35	91	41	90	42	86	31	75	14	70	5	48	21
Lander..... Min..																								
Laramie	48	30	47	4	56	6	67	5	74	24	82	29	85	36	83	35	83	25	73	5	64	0	43	24
Laramie																								
Sundance	45	27	40	9	57	23	75	15	80	29	89	32	88	43	89	40	95	25	83	15	60	11	46	21
Sundance																								
Wheatland	58	21	62	2	63	8	80	10	91	25	97	30	102	45	98	46	97	30	82	25	76	6	70	14
Wheatland																								

— sign indicates temperature below zero.

PRECIPITATION.

Wyoming is situated in what is termed the semi-arid region of the west, and although many crops are raised without irrigation, the seasonable precipitation is too light for best results.

The average yearly precipitation for the state is between thirteen and fourteen inches. Below is given the monthly precipitation for the past five years:

PRECIPITATION FOR FIVE YEARS.

STATION.	Year.....	January	February	March	April.....	May	June.....	July.....	August.....	September	October.....	November	December	Yearly.....
Cheyenne	1893	0.08	0.87	0.78	1.36	1.64	1.33	0.69	1.14	0.29	0.22	0.29	0.53	9.22
Cheyenne	1894	0.20	0.72	0.93	1.64	1.24	0.64	3.25	2.17	1.23	0.18	0.08	0.70	12.98
Cheyenne	1895	0.29	0.30	1.26	1.21	2.73	2.59	2.54	1.69	0.39	0.95	0.63	0.18	14.76
Cheyenne	1896	0.68	0.31	2.06	2.08	2.85	1.41	6.35	2.52	2.08	0.28	0.14	0.03	20.79
Cheyenne	1897	0.27	0.57	2.32	0.60	3.07	1.60	3.77	1.66	0.41	1.03	0.68	1.27	17.25
Lander	1893	0.02	1.55	1.34	2.14	1.57	1.05	0.12	0.92	0.29	0.56	0.57	0.76	10.89
Lander	1894	0.49	0.92	3.29	0.75	1.22	0.51	1.09	0.11	2.29	0.03	0.37	0.03	11.10
Lander	1895	0.68	0.21	1.17	5.71	1.32	1.90	0.19	1.04	1.74	1.00	2.30	T	17.26
Lander	1896	0.24	0.26	2.63	1.20	1.75	0.12	3.00	0.49	1.08	0.74	0.81	T	12.32
Lander	1897	0.23	1.11	1.38	1.14	1.25	0.85	1.21	1.11	0.15	1.12	0.44	1.29	11.21
Sundance	1893	0.80	....	0.90	1.45	3.49	1.75	1.75	0.97	0.46	1.84	0.50	1.05	.....
Sundance	1894	1.10	0.75	1.50	0.84	3.18	....	2.01	0.37	0.91	2.75	0.98	1.30	.....
Sundance	1895	1.20	2.10	2.50	2.48	3.47	5.25	0.45	1.35	0.75	0.47	2.72	2.10	24.84
Sundance	1896	0.70	1.90	4.50	2.71	1.94	3.45	2.38	0.53	3.35	0.66	1.20	0.40	23.72
Sundance	1897	2.00	2.30	1.90	1.67	1.57	4.19	1.98	2.48	0.43	0.72	1.53	1.30	22.07

CLOUDINESS.

Clear days are the rule in Wyoming, not the exception. The air is dry, and the damp, oppressive days, or so-called "muggy days" of the central and eastern states, are almost unknown here. The following table for the year 1897, will serve to show the number of rainy, clear, partly cloudy and cloudy days during the year:

STATION.	Days with rain.	Clear.	Partly clear.	Cloudy.
Cheyenne	106	138	156	71
Four Bear	60	212	94	59
Lander	75	126	157	82
Laramie	81	136	179	50
Sundance	94	126	154	85
Wheatland	35	174	107	84

The term "rainy day" is used to indicate a day on which .01 in. or more of precipitation fell; the term a "clear day" to indicate a day when the sky has been three-tenths or less obscured; "partly cloudy," when the sky has been from four-tenths to seven-tenths obscured; and "cloudy" when the sky has been more than seven-tenths obscured.

The average daily cloudiness for 1897 was 49 per cent at Cheyene, and 50 per cent at Lander. At Cheyenne there was an average of 62 per cent of the possible sunshine for the year. On only two days did dense fog prevail at Cheyenne for more than one hour at a time.

Railroad Facilities.

The tourist, passing through Wyoming, sees little of the agricultural portion of the state, as the railroads, for the most part, run through the open plains and on the divides between water courses, while the farming settlements, as in all semi-arid regions, are in the valleys of the rivers and creeks.

The Union Pacific railroad passes entirely across the southern portion of the state, and is the means of transportation for many thousands of settlers in the valleys of the Laramie, Platte, Green and Bear rivers, which run at right angles, practically, with the line of road. This road has 499.55 miles of main line track, 34.22 miles of branch lines and 171.08 miles of sidetrack, which, with depots, section houses and rolling stock, was assessed in 1897 for \$4,668,558.

Two daily trains run over this line, which, with its connections, run through trains from Chicago to San Francisco and Portland.

These trains stop at all principal points in the state; stage lines run from Laramie to North Park and surrounding mining camps; from Fort Steele to Saratoga and the upper Platte valley to North Park; from Rawlins to Lander and Fort Washakie, with connecting mail lines to the smaller postoffices, and also south to the Colorado line.

The Cheyenne & Northern branch of the Gulf system has 153.68 miles of road running from Cheyenne to Orin, where it makes connection with the Wyoming Central, a branch of the Northwestern system. This road has a good track, 9.73 miles of sidetrack, and an assessed valuation of \$599,352. An accommodation train runs daily, except Sunday, each way over the line, and makes close connections with trains at each terminus.

During the spring months thousands of cattle are brought

into the state over this line and turned on the open ranges to fatten for market. Valuable deposits of iron, copper and onyx are found near the northern terminus of the line, which, when developed, will afford an increasing freight traffic.

The Oregon Short Line railroad has 92.34 miles of main line and 8.87 miles of sidetrack in this state, running from its junction with the Union Pacific at Granger to a junction with the other branches of its system at Pocatello, Idaho. This line forms part of the through train system from Chicago to Portland. Immense coal deposits are now being developed near Diamondville and Kemmerer, which will soon double the freight traffic of the road. The part of this line in Wyoming is assessed at \$590,976.

The Wyoming Central branch of the Northwestern system has a trackage of 130.43 miles in Wyoming, and runs from its junction with another branch of the Fremont, Elkhorn & Misouri Valley railroad at Chadron, Neb., to its terminus at Casper, Wyoming. Daily trains are run, except Sunday, connecting at Omaha with the through transcontinental trains of the Northwestern system. This line has opened a section of the state rich in agricultural possibilities and underlaid with coal, oil and natural gas. Connections are made at Orin Junction with the Cheyenne & Northern, and at Crawford, Nebraska, with the Burlington, affording a valuable link in railroad transportation between the northern and southern portions of the state. Stage lines run from Casper into the interior of the state, reaching Lander and points in the Big Horn basin. This line is valued for assessment at \$508,677.

The Burlington system has two branches entering Wyoming, twenty-nine miles of the Cheyenne and Holdrege line running into Cheyenne and bringing valuable competition for freight traffic to the adjacent territory, while the Grand Island & Northern branch traverses the northeastern portion of the state for about two hundred and forty miles, and has built up flourishing settlements near the coal deposits of Weston and Sheridan counties, as well as in the agricultural portions of that section of the state. Through trains are run daily over this line, connecting at Lincoln, Nebraska, with the through trains of the system, and at Billings, Montana, with the through trains of the Northern Pacific.

The Burlington lines in Wyoming have an assessed value of \$1,044,543.

Stage lines are run from Moorecroft to Sundance, Clearmont to Buffalo, and from Sheridan to points in the Big Horn basin.

In order to reach the extreme western central part of the state, comprising Star valley and the Jackson's lake region, in Uinta county, it is necessary to enter the state from the Idaho side.

The road into the valley of Jackson's lake crosses Teton pass at an elevation of about 8,400 feet.

In addition to the lines of railroad above mentioned, there are some small branches from Carbon to Hanna, Evanston to Almy and Red Canon, and Laramie to the Soda lakes.

The total assessed valuation of all railroads and telegraph lines in Wyoming, in 1897, including rolling stock and Pullman cars, was \$7,640,193.50.

In addition to the lines of the Western Union Telegraph company, which follow the railroads, a short line runs from Fort Steele to Saratoga; one from Rawlins to Lander; one from Clearmont to Buffalo.

A telephone line runs from Cheyenne to Laramie, and Buffalo to Sheridan.

LIVE STOCK.

BY HON. A. A. HOLCOMBE, .

State Veterinarian.

The live stock industry of Wyoming, which long has been and is now her most important one, has a history as varied and romantic as a sixteenth century tale. Her first herds were gathered and reared by men who preceded the first attempts at actual settlement of the territory lying in the pathway of that great overland migration to the Pacific coast, which began in the middle of the present century, her territory was necessarily traversed by long trains of countless ox teams, many of which, through accident or disease, were destined never to reach their journey's end. Sick, injured, footsore and poor, these animals were abandoned to live as best they might or become a prey for the wild beasts of mountain and plain. That many of them



WYOMING CATTLE.

lived through the winter following and were fat enough for beef in the early spring-time, proved a revelation to the man accustomed to long and expensive winter feeding, and forced his attention to the fact that our mountain grasses must possess nutritious qualities of marvelous worth. Tempted by these evidences of easy thrift, one by one the white man elected to become the neighbor of the savage, and planted, here and there on mountain stream, his cabin and corral. To raise horses and cattle, was, for our earliest settlers, an easy matter; but to keep them was quite a different proposition; for the Indian had little respect for the rights of ownership, and no horse was safe beyond the reach of a bullet from his owner's trusty rifle. A few years of these exciting experiences and we find the red man forced back by the hand of the settler, whose herds had multiplied and now demanded wider and safer range. Fast following on these early days of settlement, of danger, and of accumulation came the "boom" in the cattle business during the early '80s, marked by the investment of millions of dollars by men who knew nothing of the business in which they so recklessly embarked. The early settler, however, could scarcely deem it an "ill wind" that brought him a purchaser for his ranch, his herd of cattle and his horses; and so it happened that many a man awoke to find himself comfortably rich, who, but a few years before, could have packed all of his earthly possessions on a single burro, or even on his own back. But this period of unwarranted speculation, fancy prices and extravagant waste was of short duration, and naturally enough was followed by a rapid depression of prices and the consequent failures of the inexperienced. And yet, deplorable as were the results, this bitter experience teaches no new lesson in domestic economy; neither does it in any wise detract from the material advantages which this state offers to anyone who would embark in stock raising as a legitimate business enterprise. Embracing about 98,000 square miles of territory, nearly every acre of which is clothed in a mantle of the most nutritious grasses, Wyoming present a territory for grazing purposes 40 per cent larger than all of the eastern states combined. Add to this vast food supply the most delightful climate in the world, with cool summers and dry, mild winters, and it is but little wonder that Wyoming has been called the "Stockman's Paradise."

The requisites for success in the business are a home, some hay land, a few cattle, horses or sheep, and attention to their wants in stormy weather. The man who can furnish these for a few years, will, with common prudence, find himself independent of the world, and his old age may be spent in that peace which plenty best can bring.

That success can be achieved by raising cattle in the old way is a conclusion dissipated by an experience of the last twenty years. To turn stock loose upon the range in large numbers, without regard to the condition of the food supply, or provision for bad weather, had brought disaster to every large herd in the state; and today finds in their stead hundreds of small owners, whose thrift is attested by prosperous homes and a bank account with a balance on the satisfactory side of the ledger. To these natural conditions, which have always favored the stock raising industry, must be added the zealous care with which the state has ever guarded the health of her live stock; for no state in the Union has provided better laws and sanitary regulations against the introduction of disease than has Wyoming, and nowhere is the mortality less, or a guarantee for future protection better than here.

With these many advantages to her credit, Wyoming bids welcome to her fertile valleys and grass-grown hills every man who seeks a home where the gaunt fingers of want are unstrung and his daily bread unsoured by the sweat of honest toil.

GOVERNMENT LANDS.

BY HON. W. E. CHAPLIN,
Register United States Land Office, Cheyenne.

The area of Wyoming is 97,883 square miles, or 62,645,120 acres. Of this vast area 51,890,201 acres are surveyed, and 10,754,919 acres are unsurveyed.

The public lands vacant and subject to entry and settlement in the state, according to the last report received from the United States General Land Office, were: Surveyed lands, 42,173,839 acres; unsurveyed, 7,167,744 acres; total, 49,341,583 acres.

The unappropriated lands of the United States in the state of Wyoming, as comprised in the several United States land districts, are as follows:

District.	Surveyed.	Unsurveyed.	Total.
Buffalo	6,860,891	883,440	7,744,331
Cheyenne	8,854,910	424,659	9,279,569
Douglas	7,467,640	655,670	8,123,310
Evanston	9,213,351	2,825,415	12,038,766
Lander	4,624,328	2,378,560	7,002,888
Sundance	5,152,719		5,152,719
Total	42,173,839	7,167,744	49,341,583

The same report gives the area of unappropriated and unreserved lands in the several counties in the state as follows:

Albany	1,746,076
Big Horn	6,533,060
Carbon	3,683,868
Converse	4,051,949
Crook	3,099,527
Fremont	5,683,126
Laramie	2,892,293
Johnson	2,438,422
Natrona	3,311,466
Sheridan	1,313,138
Sweetwater... ..	6,406,249
Uinta	5,603,264
Weston	2,579,147
Total	49,341,583

The public lands in Wyoming consist chiefly of grazing, timber and agricultural, though there are large areas of coal, oil and mineral lands.

The agricultural lands are those lying contiguous to the rivers and streams and are vast in extent, but crops cannot be successfully raised without irrigation. By the application of water the soil is rendered very productive, and is not surpassed by the fertile states of the Mississippi and Missouri valleys.

The laws under which title may be acquired by citizens of the United States to Government lands are the homestead law, the desert land law, the timber and stone law, and the coal and mineral laws.

HOMESTEAD LAW.

The homestead law secures to qualified persons the right to settle upon, enter and acquire title to not exceeding one quarter section of one hundred and sixty acres of public land, by establishing and maintaining residence thereon and improv-

ing and cultivating the land for the period of five years. A homestead entryman must be the head of a family, or a person who has arrived at the age of twenty-one years. He must be a citizen of the United States, or one who had declared his intention to become such, as required by the naturalization laws. The act of March 3, 1891, attaches the condition that he must not be the proprietor of more than one hundred and sixty acres of land in any state or territory.

The class of lands subject to entry under the homestead laws are described by the statutes as unappropriated public lands. Parties who are prevented by reason of distance, bodily infirmity or other good cause from personal attendance at the district land office may make the preliminary affidavits for homestead entries within the county in which they reside before any commissioner of the United States court having jurisdiction over the county in which the land is situated, or before the judge or clerk of any court of record of such county, and to transmit the same, with their application and the proper fees and commissions, to the Register and Receiver of the district land office, thus permiting entries to be effected without personal attendance at the district office. Applicants availing themselves of this privilege are required to transmit with their applications an affidavit setting forth specifically why they cannot appear at the land office.

Where a wife has been divorced from her husband or deserted, so that she is dependent upon her own resources for support, she can make a homestead entry as the head of a family or femme sole.

A single woman who makes a homestead entry and marries before making proof, does not forfeit her right, provided she does not abandon her residence on the land to reside elsewhere. Where two parties, however, unite in marriage, each having an unperfected homestead entry, both entries cannot be carried to patent. A residence elsewhere than on the land entered for more than six months is treated as an abandonment of a homestead entry.

Parties desiring to commute their homestead entries to cash are required to make proof of settlement and of residence and cultivation of the land for a period of fourteen months from the date of entry.

There are many other provisions relating to restoration of rights, adjoining homesteads, soldiers' and sailors' homestead rights, additional entries, etc., too numerous to mention in the space of this brief article.

The following is a table of fees and commissions charged in the mountain states:

ACRES	CLASS OF LANDS.	COMMISSIONS.		FEE.	TOTAL SUM.
		PAYABLE WHEN ENTRY IS MADE.	PAYABLE WHEN CERTIFICATES ISSUES.	PAYABLE WHEN ENTRY IS MADE	
160	\$2 50	\$12.00	\$12.00	\$10.00	\$34.00
80	2.50	6.00	6.00	5.00	17.00
40	2 50	3.00	3.00	5 00	11.00
160	1.25	0.00	6.00	10.00	22.00
80	1.25	3.00	3.00	5.00	11.00
40	1.25	1.50	1.50	5.00	8.00

DESERT LANDS.

All lands, exclusive of timber lands and mineral lands, which will not, without artificial irrigation, produce some agricultural crop, are deemed desert lands, and are subject to entry under the desert land law. The party making entry is required at the time of filing his declaration to file also a map of the land, which will exhibit a plan showing the mode of contemplated irrigation, and which plan will be sufficient to thoroughly irrigate and reclaim said land and prepare to raise ordinary agricultural crops. Persons may associate together in the construction of canals and ditches for irrigating and reclaiming tracts entered or proposed to be entered by them, and they file a joint map, or maps, showing their plan of internal improvements. No person is permitted to enter more than three hundred and twenty acres of land in the aggregate under all the land laws of the United States, mineral lands excepted. Parties initiating desert claims are required to show observance of such inhibition.

The right to make desert land entries is restricted to resident citizens of the state in which the land sought is located. Citizenship and residence must be duly shown. The entryman must expend at least three dollars per acre, one dollar per acre during each year for three years, and must file proof thereof during each year, such proof to consist of his affidavit, corroborated by the affidavits of two or more witnesses, showing that the full sum of one dollar per acre has been expended during such year and the manner in which expended, and at the expiration of three years a map or plan showing the character and extent of the improvements.

Failure to file the required proof during any year shall cause the land to revert to the United States, the money paid to be forfeited and the entry to be canceled. The party may

make his final entry and receive his patent at any time prior to the expiration of three years by making required proof of reclamation and of the expenditure of the aggregate amount of three dollars per acre, and of the cultivation of one-eighth of the land. Persons making desert land entries must acquire clear right to the use of sufficient water for the purpose of irrigating the whole of the land, and of keeping it permanently irrigated. Persons making desert land entries before they have secured a water right, do so at their own risk. The price of land sought to be entered under the provisions of the desert land act is \$1.25 per acre, without regard to the situation of the lands in relation to railroad grants. When proof of the character of the land has been made, the applicant will pay the Receiver twenty-five cents per acre for the land applied for. At the time of making final proof the payment of one dollar per acre is required.

TIMBER AND STONE ENTRIES.

The act of June 3, 1878, provides that surveyed lands in the public land states, valuable chiefly for timber and stone, unfit for cultivation and consequently unfit for disposal under the homestead and desert laws, may be purchased by individuals and by associations at the minimum price of two dollars and fifty cents per acre. A party making application to purchase a tract of this character is required to make affidavit that he is a citizen of the United States by birth or naturalization, or that he has declared his intention to become a citizen under the naturalization laws. The quantity of land which may be acquired lawfully under said act by any one person or association is limited to not exceeding one hundred and sixty acres, which must be in one body.

COAL.

A qualified person has the right to enter by legal subdivision any quantity of coal lands in the United States not otherwise appropriated or reserved by competent authority, not exceeding one hundred and sixty acres to such individual person or three hundred and twenty acres to an association, upon payment to the Government of not less than ten dollars per acre for such lands, where the same shall be situated more than fifteen miles from any completed railroad, and not less than twenty dollars per acre for such lands as shall be within fifteen miles of such road. A party or association having opened and improved any coal mine, or mines, upon the public lands, and who shall be in actual possession of the same, is

entitled to a preference right of entry, and it is provided that when any association of not less than four persons, duly qualified, as provided by law, shall have expended not less than five thousand dollars in working and improving any coal mine, or mines, such association may enter not exceeding six hundred and forty acres, including such mining improvements.

MINES AND MINERAL LANDS.

Lands valuable for deposits of mineral, such as fire and pottery clays, marble, asphalt, soda, sulphur, diamonds or of the precious and common metals, are subject to sale under the mining laws. A location must be first duly made and recorded, and certain sums must be annually expended. Five hundred dollars' worth of labor and improvements must be laid out on each claim before patent can be applied for. The rules and regulations and methods of procedure are too extensive and complex to be reviewed at length in the compass of this brief article. Mining locations defeat all railroad and state selections, if the mines and minerals were discovered and known to exist, or were discovered prior to the time the road and state claims took effect. Homestead, desert and timber and stone entries cannot embrace known mineral lands, unless it be first shown that the lands sought to be entered are more valuable for agricultural purposes than for the minerals they contain.

PUBLIC LIBRARIES.

Wyoming early made provision for the purchase and exchange of valuable law books and reports. The library is in charge of the State Librarian, under the direction of the Justices of the Supreme Court, and is open during the business hours observed in the public offices at the Capitol. The law library contains nearly twenty thousand volumes, exclusive of the public laws and documents of the state.

Of the 260,000 acres of land granted by the general Government for state charitable, educational, penal and reformatory institutions, in addition to special land grants for such purposes, 15,000 acres were set aside in 1897 for the maintenance of the law library. At the present time these lands yield an annual income from rents of about seven hundred and fifty dollars, which has been used in the purchase of new books.

An act to increase the state library by adding a miscellaneous collection of standard books was also passed by the Legislature in 1897, and fifteen thousand acres of land set aside, the income from which is to be used in the maintenance of a miscellaneous library. The nucleus of such a library, consisting of several hundred volumes, has been purchased and is now available to the citizens of the state. Provision has also been made by the state for the establishment of county libraries, and in many counties such libraries are maintained for the benefit of the residents.

Under the auspices of the Wyoming Historical society, have been collected many early books, papers and documents bearing upon the early history of Wyoming, and which are open to inspection at the state library.

STATE LANDS.

HOW THEY MAY BE ACQUIRED.

BY A. J. PARSHALL,

Chief Clerk State Board of Land Commissioners.

There are two classes of state lands.

First.—Those donated to the state for various public purposes, and over which the state has absolute control.

Second.—Those donated to the state conditional upon their reclamation, and known as “arid lands.”

Wyoming, for its various institutions, and by virtue of the several acts of Congress, has become the possessor of lands of the first class, as follows:

Under the organic act creating the territory, approved

July 25, 1868, for the use of the public schools, sections sixteen and thirty-six in each township3,670,000 acres

Under the act of February 18, 1881, granting to the territory for the use and support of a university

when it shall become a state, seventy-two entire sections of land 46,000 acres

Under the act of admission, approved July 10, 1890, for the purpose of erecting public buildings at the Capital of the state, fifty entire sections		32,000 acres
For use of an agricultural college		90,000 acres
For use of insane asylum in Uinta county		30,000 acres
For use of penal, reform and educational institution in Carbon county		30,000 acres
For use of penitentiary in Albany county		30,000 acres
For use of fish hatchery in Albany county		5,000 acres
For use of deaf, dumb and blind asylum in Laramie county		10,000 acres
For use of poor farm in Fremont county		30,000 acres
For use of hospital for disabled miners, Carbon county.		30,000 acres
For use of public buildings at the Capital		75,000 acres
For use of state, charitable, educational and penal institutions.....		260,000 acres
Total		4,338,000 acres

Lands included in the foregoing list and not located by the acts themselves, have been practically all selected by the state authorities, and lands granted in lieu of school lands, where possession has been lost to the state because of prior occupation, are now being selected, and will become the property of the state before the close of the season of 1898.

Under the provisions of the Constitution and statutes, the State Board of Land Commissioners, consisting of the Governor, Secretary of State and Superintendent of Public Instruction, have the direction, control, disposition and care of all lands granted to the state.

MAY BE SOLD.

The act of admission provides that all school lands, including the grant for the use of the agricultural college, shall be sold for not less than ten dollars per acre. The Constitution provides further that lands heretofore and hereafter acquired shall be sold for not less than ten dollars per acre, and that such lands shall be disposed of at public auction, providing, also, that actual and bona fide settlers shall have the preference right to purchase in tracts not exceeding one hundred and sixty acres.

MAY BE LEASED.

Chapter 79 of the Session Laws of 1890-91 authorizes the State Board of Land Commissioners to lease any legal subdivision of the lands of the state at an annual rental not less than

5 per centum of the valuation thereof, fixed by the board, conditioned upon the payment of the rent annually, and in advance, and for periods of not more than five years. When any lease expires by limitation, the lessee may, with the permission of the board, renew the same, as follows: At any time within ninety days next preceding the expiration of the lease, the lessee or his assigns, shall notify the Register of his desire to renew the lease. If the lessee and the board be agreed as to the valuation of the land, a new lease shall be issued, bearing even date with the expiration of the old one, and upon like conditions.

The power given to the board to refuse to renew a lease, or to sell state land at the expiration of a lease, or again, to lease to other parties than to the original lessee, shall not apply whenever the original lessee of the state lands, or his assigns, shall have during the period of his lease, or prior thereto, reclaimed the same by irrigation, and shall have provided suitable ditches for its full and complete reclamation, and shall have secured an adequate and perpetual water supply for said land, then in that case the original lessee shall have the right to renew such lease for a term of five years, which renewal may be repeated for the same period five years thereafter, and may again be repeated for the same period ten years thereafter, making a total period not to exceed twenty years; provided, that each of said renewals shall be dependent upon the continuous irrigation and cultivation of at least forty acres in every one hundred and sixty acres of said land, and in case the lessee shall have failed to cultivate the said land, then said board shall have the authority to refuse to renew the lease as hereinbefore provided.

The lessee of state lands is prohibited, in all cases, from cutting or using more timber thereof than shall be necessary for the improvement of such lands, or for fuel for use of the family of the lessee, and the cutting and hauling of timber from leased state lands to saw-mills.

Any lease of state lands procured by fraud, deceit or misrepresentation, may be cancelled by the board upon proper proof thereof.

The necessary blanks will be supplied any person desiring to lease state lands upon application to the Register of the State Board of Land Commissioners.

ARID LANDS.

The act of Congress, approved August 18, 1894, donated to the state of Wyoming, conditional upon its reclamation, 1,000,000 acres of arid land. The state of Wyoming accepted the conditions of the grant, and by Chapter 38 of the Session Laws of 1895, provided for its reclamation, occupation and disposal, the general provisions of which are as follows:

REQUEST AND PROPOSAL.—Any person or company of persons, having constructed, or desiring to construct ditches, canals or other irrigation works to reclaim land under the provisions of this act, shall file with the State Board of Land Commissioners a request for the selection of the land to be reclaimed, and accompany this request by a proposal to construct the ditch, canal or other irrigation works necessary for the complete reclamation of the land asked to be selected, and to make clear to the board their financial ability to carry out the proposed undertaking.

GUARANTEE.—A certified check for a sum not less than \$250, nor more than \$2,500, as may be determined by the board, and as a guarantee that a contract will be entered into with the state, in accordance with its terms, shall accompany such request and proposal.

MAPS AND FIELD NOTES.—An accurate survey must be made, and maps and field notes furnished the board, in accordance with its regulations, with a certified copy of a permit from the State Engineer to appropriate water for the reclamation of the land described.

TERMS OF CONTRACT WITH STATE FOR CONSTRUCTION—WITH SETTLER FOR WATER AND LAND—BOND.—Upon the withdrawal of the land by the Department of the Interior, it shall be the duty of the board to enter into a contract with the parties submitting the proposal, which contract shall contain complete specifications of the location, dimensions, character and estimated cost of the proposed ditch, canal or other irrigation work; the price and terms, per acre, at which such works and perpetual water rights shall be sold to settlers; Provided, That such price and terms for irrigation works and water rights shall in all cases be reasonable and just.

This contract shall not be entered into on the part of the state until a satisfactory bond is filed by the proposed contractor for irrigation works, which bond shall be in penal sum equal to 5 per cent of the estimated cost of the works.

TIME ALLOWED FOR CONSTRUCTION.—No contract shall be made by the board which requires a greater time than five years for the construction of the works, and all contracts shall state that the work shall begin within six months from date of contract; that at least one-tenth of the construction work shall be completed within two years from the date of said contract; and that construction shall be prosecuted diligently and continuously to completion.

APPLICATION FOR ENTRY—COST OF LAND.—Any citizen of the United States, or any person having declared his intention to become a citizen of the United States (excepting married women, not the heads of families), over the age of twenty-one years, may make application, under oath, to the board, to enter any of said land in any amount not to exceed one hundred and sixty acres for any one

person. Such application must be accompanied by a certified copy of a contract for a perpetual water right, made and entered into by the party making application with the person, company or association who have been authorized by the board to furnish water for the reclamation of said lands. All applications for entry shall be accompanied by a payment of twenty-five cents per acre, which shall be paid as a partial payment on the land, if the application is allowed. If the application is not allowed, the twenty-five cents per acre accompanying it shall be returned to the applicant; Provided, That where the construction company fails to furnish water to any settler under the provisions of its contract with the state, the state shall refund to such settler all payments that he shall have made to the state. The board shall dispose of all lands accepted by the state under the provisions of this act at a uniform price of fifty cents per acre, half to be paid at the time of entry and the remainder at the time of making final proof by the settler.

RECLAMATION—WHEN TO BEGIN—FINAL PROOF.—Within one year after any person, company of persons authorized to construct irrigation works under the provisions of this act, shall have notified the settlers under such works that they are prepared to furnish water under the terms of their contract with the state, the said settler shall cultivate and reclaim not less than one-sixteenth part of the land filed upon, and within two years after the said notice, the settler shall have actually irrigated and cultivated not less than one-eighth of the land filed upon, and within three years from the date of said notice the settler shall make final proof of reclamation, settlement and occupation, which proof shall embrace evidence that he has a perpetual water right for his entire tract of land sufficient in volume for the complete irrigation and reclamation thereof, and that he is an actual settler thereon.

PATENTS—WATER RIGHTS APPURTENANT.—The water rights to all lands acquired under the provisions of this act shall attach to and become appurtenant to the land as soon as title passes from the United States to the state.

FEES.—The board shall collect the following fees: For filing each application, one dollar; for filing each final proof, one dollar; for issuing each patent, one dollar; for making certified copies of papers or records, the same fee as provided for to be charged by the Secretary of State for like services. The money collected for fees shall be paid to the Treasurer of the state, and by him credited to the fund created by virtue of this act.

The State Board of Land Commissioners, in 1896, submitted a report to the Governor, describing in full the operations under the act, with a compilation of the statutes, rules and regulations relating thereto, which will be mailed to those interested, upon application to the Chief Clerk.

STOCK COMPANIES--FEES.

Under the laws of Wyoming, any three or more persons may unite for the purpose of incorporating a stock company by making, signing and acknowledging before some officer competent to take acknowledgments of deeds, duplicate certificates in writing, in which shall be stated the corporate name of the company, the object for which formed, the amount of capital stock, the term of existence, not to exceed fifty years, the number of shares, the number of trustees and their names, not more than nine in number, and not less than three, and who shall manage the concerns of the company for the first year, the name of the town and county in which operations shall be carried on; and shall file one of said certificates in the office of the County Clerk of each county wherein the business of the company is to be carried on, and one in the office of the Secretary of State, paying in advance to such officers the following fees: To the Secretary of State for filing and recording certificates of incorporation:

When capital stock does not exceed \$5,000.....\$ 5.00
 When capital stock exceeds \$5,000, but does not exceed \$100,000. 10.00
 When capital stock exceeds \$100,000, the sum of \$10.00, and five cents additional for each \$1,000 in excess of \$100,000.....—

To the Secretary of State for filing and recording articles of incorporation of companies not organized for profit and having no capital stock, the following:

For filing each paper\$ 1.00
 For recording the first folio of one hundred words..... 1.00
 For recording each subsequent folio or fraction..... .15

To the County Clerk for filing and recording any certificate of incorporation, ninety cents for the first folio, and ten cents for each additional folio of one hundred words.

FOREIGN CORPORATIONS.

Before transacting business in the state, a foreign corporation is required to file, in the office of the Secretary of State and with the County Clerk of the county in which the business is to be done, a certified copy of its articles of incorporation, together with a certified copy of the general incorporation law under which organized, and to pay the same fees as required of domestic corporations. A foreign corporation is also required to file an acceptance of the Constitution.

WATER.

HOW TO SECURE THE USE OF WATER FOR IRRIGATION AND OTHER BENEFICIAL USES.

As the future agricultural development of the state rests largely upon the prudent and economical use and distribution of its water supply, it has been deemed a wise step to establish a state department under an efficient officer, who exercises, through a Board of Control, careful supervision of the use and distribution of the waters of the state. From this department have been issued to persons desiring to apply for permits to appropriate water, brief instructions, of which the following is a copy:

APPLICATIONS.

Applications must be made upon the blank form approved by the State Engineer. Applications to enlarge existing ditches, or to increase the acreage watered therefrom, must be made on an enlargement blank. In giving dimensions, remember the following:

"Width on top" is the width at surface water line. Depth is the depth of water the ditch or canal is to carry.

The area to be irrigated must be given; where not measured, an estimate must be made, and where only part of a sub-division is to be watered, the estimate must give the acreage in each forty acres of these fractional sub-divisions.

The law requires applications to be made and approved by the State Engineer before work begins. No application which states that work has begun or has been completed will be approved.

MAPS.

Each application must be accompanied by two maps, one of which must be on tracing linen.

These maps must be drawn to a scale of two inches to the mile, or larger, and on sheets not less than six by nine inches.

They must show the location of the headgate by courses and distance from some Government corner. They must show

the actual location of the ditch or canal, and where Government survey lines are crossed, the distance to the nearest corner must be given. (Where corners cannot be found, give the location of line by courses and distances.)

The map must show the course of and name of stream from which water is taken; the location and area of land to be irrigated, or place where water is to be used for other purposes. (This may be done by marking the boundaries or by coloring the areas.)

Wherever the canal line crosses streams or other ditches, the location of such crossings must be shown, and such intersecting streams and ditches must be marked by ink of a different color.

Maps must contain the name of the ditch, canal or reservoir, and the postoffice of the surveyor, with date of survey.

RESERVOIRS AND DAMS.

Plans of dams, cribs or embankments must be drawn on a longitudinal scale of not less than one inch to one hundred feet, and for cross sections of not less than one inch to four feet. The plans for outlet and waste ways for reservoirs shall be drawn on a scale of one inch to four feet.

The maps of reservoirs shall show the total area to be submerged, and enough levels to permit of computing its capacity.

FEES.

For filing and examining applications for permits to appropriate water, two dollars.

For recording statements of claim, one dollar and fifty cents.

For recording applications for reservoir permits, one dollar.

For recording any other water right instrument—for the first one hundred words, one dollar; for each subsequent folio, fifteen cents.

For issuing certificates of appropriation, one dollar.

For making certified copies of record, per folio, fifteen cents.

For attaching certificate, one dollar.

THE MINING LAWS OF WYOMING.

COMPILED BY HON. J. A. VAN ORSDEL,
Attorney General.

ORGANIZATION OF MINING DISTRICT.

Sec. 1. In any mining district or in mining field of discovery of veins, leads, lodes or ledges, or of gold placers, petroleum fields, soluble salt deposits, or of mineral lands whatever, or of any lands that are, or may be hereafter, opened to location under the laws governing mineral deposits, the miners may meet and organize and elect a recorder and make regulations, not in conflict with the laws of the United States or with the laws of this state governing the location, manner of recording and amount of annual work necessary to hold possession of a mining claim within the district subject to the following requirements:

1. That any five miners having locations, or owning in part or in whole, claims within the proposed district, shall give notice by at least three written or printed, or partially written and partially printed notices, posted in prominent places within the proposed district of a meeting called by them for organizing such district at a date at least ten days subsequent to the posting of such notices.

2. That the meeting thus called shall be attended by at least ten persons, all having locations, or owning, in part or in whole, claims within the proposed district.

3. That the recorder elected for such an organized district, shall hold his office until his successor is elected and qualified according to law. Such recorder is required to give bonds, with at least two sureties, to the people of Wyoming, in the penal sum of not less than one thou and dollars for the faithful performance of his duties, and for the turning over of all books, papers, records, etc., of his office, to his duly elected and qualified successor, which bond shall be approved by the Judge of the District Court and filed in the office of the County Clerk and ex-Officio Register of Deeds. The recorder of such a mining district may appoint a deputy, for whose official acts he shall be responsible.

4. That no district need be organized if the majority, at the meeting as hereinbefore provided, so desire, but when a district is once organized, it cannot be sub-divided, except in accordance with the local laws of the district, enacted at the regular or special meetings, or by action of the Legislature of this state. In case of the abandonment of any district, for any cause whatever, it shall be the duty of the district recorder, as soon as practicable thereafter, to deposit all records and other papers pertaining to his office, in the office of the County Clerk and ex-Officio Register of Deeds of the county in which such district is located.

5. Each mining district may regulate the fees to be charged by the local recorder for recording location certificates, affidavits of labor and all other instruments to be filed in the said recorder's office. (S. L. 1888, Ch. 40, Sec. 1.)

COPY OF LAWS AND PROCEEDINGS TO BE FILED.

Sec. 2. A copy of all laws, and the proceedings of each mining district shall be filed by the recorder of the district in the office of the County Clerk and ex-Officio Register of Deeds of the county in which the district is situated, which shall be taken as evidence in any court having jurisdiction in the matter concerned under such laws or proceedings; and all such laws and proceedings of any mining district heretofore filed in the County Clerk's office of the proper county, and transcripts thereof duly certified, shall have the like effect in evidence. Such copies of laws and proceedings shall be filed in the office of the said County Clerk and ex-Officio Register of Deeds by the recorder of each mining district within sixty days after the organization of each new mining district, or within sixty days after new laws were adopted or proceedings had. (S. L. 1888, Ch. 40, Secs. 2 and 3.)

USE OF WATER.

Sec. 3. Whenever any person, persons or corporation, shall be engaged in mining or milling in this state, and in the prosecution of such business, shall hoist or bring water from mines or natural water courses, such person, persons or corporation shall have the right to use such water in such manner, and direct it into such natural course or gulch as their business interests may require; provided, that such diversion shall not infringe on vested rights. The provisions of this section shall not be construed to apply to new or undeveloped mines, but to those only which shall have been open and require drainage or other direction of water. (S. L. 1888, Ch. 40, Sec. 4.)

MINING CLAIMS SUBJECT TO RIGHT OF WAY.

Sec. 4. All mining claims or property now located, or which may hereafter be located, within this state, shall be subject to the right of way of any ditch or flume for mining purposes, or of any tramway, pack trail or wagon road, whether now in use, or which may hereafter be laid out across any such location, claim or property; provided, always, that such right of way shall not be exercised against any mining location, claim or property duly made and recorded as herein required, and not abandoned prior to the establishment of any such ditch, flume, tramway, pack trail or wagon road, without the consent of the owner or owners, except in condemnation, as in the case of land taken for public highways. Consent to the location of the easements above enumerated over any mineral claim, location or property, shall be in writing; and provided, further, that any such ditch or flume shall be so constructed that water therefrom shall not injure vested rights by flooding or otherwise. (S. L. 1888, Ch. 40, Sec. 5.)

PROTECTION OF SURFACE PROPRIETORS.

Sec. 5. Where a mining right exists in any case and is separate from the ownership or right of occupancy to the surface, such owner or rightful occupant of the said surface may demand satisfactory security from the miner or miners, and if such security is refused, such owner or occupant of the surface may enjoin the miner or miners from working such mine until such security is given. The order for such injunction shall fix the amount of the bond therefor. (S. L. 1888, Ch. 40, Sec. 6.)

RELOCATION CERTIFICATES.

Sec. 6. Whenever it shall be apprehended by the locator, or he assigns, of any mining claims or property heretofore or hereafter located, that his or their original location certificate was defective, erroneous, or that the requirements of the law had not been complied with before the filing thereof, or shall be desirous of changing the surface boundaries of his or their original claim or location, or of taking in any part of an overlapping claim or location which has been

abandoned, or in case the original certificate was made prior to the approval of this law, and he or they shall be desirous of securing the benefit of this law, such locator or locators, or his or their assigns, may file an additional location certificate in compliance with and subject to this law; provided, however, that such relocation shall not infringe upon the rights of others existing at the time of such relocation, and that no such relocation, or other record thereof, shall preclude the claimant or claimants from proving any such title, or titles, as he or they may have held under any previous location. (S. L. 1888, Ch. 40, Sec. 7.)

LOCATION CERTIFICATES SHALL DESCRIBE BUT ONE CLAIM.

Sec. 7. No location certificate shall contain more than one claim or location, whether the location be made by one or more locators, and any location certificate that contains upon its face more than one location claim shall be absolutely void, except as to the first location named and described therein, and in case more than one claim or location is described together, so that the first one cannot be distinguished from the others, the certificate of location shall be void as an entirety. (S. L. 1888, Ch. 40, Sec. 8.)

STEALING MINING CLAIMS—PENALTY—EVIDENCE.

Sec. 8. In all cases when two or more persons shall, through collusion or otherwise, associate themselves together for the purpose of obtaining possession of any lode, gulch or placer, or other mineral claim or mining property within this state, then in the actual possession of another or others, by force and violence, or threats of violence, or by stealth, and shall proceed to carry out such purpose by making threats to and against the party or parties in possession, or who shall enter upon such lode, gulch, placer or other mineral claim or mining property for the purposes aforesaid, or who shall enter upon or into mineral claim or mining property; or, not being on such mining claim or mineral property, but within hearing of the same, shall make any threats or any use of any language, signs, gestures, intended to intimidate any person or persons in possession or at work on the said claim or claims of mineral property of whatever kind or nature, from continuing such possession or work thereon or therein, or to intimidate others from engaging to be employed thereon or therein, every such person or persons so engaging shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined in a penal sum not exceeding two hundred and fifty dollars, and be imprisoned in the county jail for not less than thirty days, nor more than six months, or by both such fine and imprisonment. On trial of any person or persons charged with any of the offenses enumerated in this section, the proof of a common purpose of two or more persons to unlawfully secure possession of any mining claim or mineral property within the state, or to intimidate any one in the possession of, or laborers at work on any mining claim or mineral property aforesaid, accompanied or followed by any acts or utterances of such person or persons as herein enumerated, shall be sufficient evidence to convict any one committing such acts, although such parties may not be associated or acting together at the time of the commission of such offenses. (S. L. 1888, Ch. 40, Sec. 9.)

DESTROYING MINING PROPERTY—PENALTY.

Sec. 9. Any person or persons who shall unlawfully cut down, break down, level, demolish, destroy, injure, remove or carry away any sign, notice, post, mark, monument or fence upon or around any shaft, pit, hole, incline or tunnel, or any building, structure, machinery, implements or other property on any mining claim or mineral property, ground or premises, shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined a penal sum of money not less than fifty dollars, nor more than one thousand dollars, or be impris-

oned for not less than thirty days nor more than one year, or by both such fine and imprisonment, in the discretion of the court. (S. L. 1888, Ch. 40, Sec. 10.)

MINING SWINDLES—PENALTY.

Sec. 10. Any person or persons who shall defraud, cheat, swindle or deceive any party or parties in relation to any mine or mining property by "salting," or by placing or causing to be placed in any lode, placer or other mine, any genuine metals or material representing genuine minerals, which are designed to cheat and deceive others, for the purpose of gain, whereby others shall be deceived and injured by such, shall be guilty of a felony, and upon conviction thereof, shall be fined in a penal sum of not less than fifty dollars, and not more than five thousand dollars, or imprisoned in the penitentiary for not more than three years or both fine and imprisonment, in the discretion of the court. (S. L. 1888, Ch. 40, Sec. 11.)

PROTECTION OF LIVE STOCK FROM MINING SHAFTS—PENALTY FOR FAILURE TO PROTECT.

Sec. 11. Every person, persons, company or corporation, who have already sunk mining shafts, pits, holes, inclines, upon any mining claim, or on any mineral property, ground or premises, or who may hereafter sink such openings aforesaid, shall forthwith secure such shafts and openings against the injury or destruction of live stock running at large upon the public domain, by securely covering such shafts and other openings, as aforesaid, in a manner to render them safe against the possibility of live stock falling into them, or in any manner becoming injured or destroyed thereby; or by forthwith making a strong, secure and ample fence around such shafts and other openings aforesaid. Any person, persons, corporation or company that shall fail or refuse to fully comply with the provisions of this section, shall be guilty of a misdemeanor, and on conviction thereof, shall be liable for any damages sustained by injury or loss of live stock thereby. (S. L. 1888, Ch. 40, Sec. 12.)

LENGTH OF LODGE CLAIM.

Sec. 12. The length of any lode mining claim located within Wyoming, shall not exceed fifteen hundred feet, measured horizontally, along such lode or vein. Nor can the regulations of any mining district limit a locator to less than this length. (S. L. 1888, Ch. 40, Sec. 13.)

WIDTH OF LODGE CLAIM.

Sec. 13. The width of any lode claim located within Wyoming shall not exceed three hundred feet on each side of the discovery shaft, the discovery shaft being always equally distant from the side lines of the claims. Nor can any mining district limit the locator to a width of less than one hundred and fifty feet on either side of the discovery shaft. (S. L. 1888, Ch. 40, Sec. 14.)

RECORDING MINING CLAIMS—REQUISITES OF CERTIFICATES.

Sec. 14. A discoverer of any mineral lead, lode, ledge or vein shall, within sixty days from the date of discovery, cause such claim to be recorded in the office of the County Clerk and ex-Officio Register of Deeds of the county within which such claim may exist, by a location certificate which shall contain the following facts:

1. The name of the lode claim.
2. The name or names of the locator or locators.
3. The date of location.
4. The length of the claim along the vein, measured each way from the center of the discovery shaft, and the general course of the vein as far as it is known.
5. The amount of surface ground claimed on either side of the center of the discovery shaft or discovery workings.

6. A description of the claim by such designation of natural or fixed objects, or if, upon ground surveyed by the United States system of land survey, by reference to section or quarter section corners, as shall identify the claim beyond question. (S. L. 1888, Ch. 108, Sec. 1.)

IMPERFECT CERTIFICATES, VOID.

Sec. 15. Any certificate of the location of a lode claim which shall not fully contain all the requirements named in the preceding section, together with such other description as shall identify the lode or claim with reasonable certainty, shall be void. (S. L. 1888, Ch. 40, Sec. 16.)

PRE-REQUISITES TO FILING LOCATION CERTIFICATE.

Sec. 16. Before the filing of a location certificate in the office of the County Clerk and ex-Officio Register of Deeds, the discoverer of any lode, vein or fissure shall designate the location thereof as follows:

1. By sinking a shaft upon the discovered lode or fissure, to the depth of ten feet from the lowest part of the rim of such shaft at the surface.

2. By posting at the point of discovery, on the surface, a plain sign or notice, containing the name of the lode or claim, the name of the discoverer or locator, and the date of such discovery.

3. By marking the surface boundaries of the claim, which shall be marked by six substantial monuments of stone or posts, hewed or marked on the side or sides, which face is toward the claim and sunk in the ground, one at each corner, and one at the center of each side line, and when thus marking the boundaries of a claim, if any one or more of such posts or monuments of stone shall fall, by necessity, upon precipitous ground, when the proper placing of it is impracticable or dangerous to life or limb, it shall be lawful to place any such post or monument of stone at the nearest point, properly marked, to designate its right place; provided, that no right to such lode or claim or its possession or enjoyment, shall be given to any person or persons, unless such person or persons shall discover in said claim mineral bearing rock in place. (S. L. 1888, Ch. 40, Sec. 17.)

WHAT OPEN CUT EQUIVALENT TO DISCOVERY SHAFT.

Sec. 17. Any open cut which shall cut the vein ten feet in length, and with face ten feet in height, or any cross-cut tunnel, or tunnel on the vein ten feet in length which shall cut the vein ten feet below the surface, measured from the bottom of such tunnel, shall hold such lode the same as if a discovery shaft were sunk thereon. (S. L. 1888, Ch. 40, Sec. 18.)

TIME GIVEN DISCOVERER TO SINK SHAFT.

Sec. 18. The discoverer of any mineral lode or vein in this state shall have the period of sixty days from the date of discovering such lode or vein, in which to sink a discovery shaft thereon. (S. L. 1895, Ch. 108, Sec. 2.)

MINERAL BOUNDARIES DEFINED.

Sec. 19. The locators of all mining locations heretofore made, or which shall hereafter be made, on any mineral vein, lode or ledge, situated on the public domain, their heirs and assigns, shall have the exclusive right of possession and enjoyment of all the surface included with in the lines of their locations, and of all veins, lodes and ledges throughout their entire depth, the top or apex of which lies inside of surface lines extended downward vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side lines of such surface locations. But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as above described,

through the end lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize a locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim to enter upon the surface of a claim owned or possessed by another. (S. L. 1888, Ch. 40, Sec. 20.)

RELOCATION OF ABANDONED CLAIMS.

Sec. 20. Any abandoned lode, vein or strata claim may be relocated and such relocation shall be perfected by sinking a new discovery shaft and by fixing new boundaries in the same manner, as provided for the location of a new claim; or the relocater may sink the original discovery shaft ten feet deeper than it was at the time of its abandonment, and erect new, or adopt the old boundaries, renewing the posts or monuments of stone, if removed or destroyed. In either event, a new location stake shall be fixed. The location certificate of an abandoned claim may state that the whole or any part of the new location is located as an abandoned claim. (S. L. 1888, Ch. 40, Sec. 21.)

LOCATION CERTIFICATES OF PLACER CLAIMS.

Sec. 21. That hereafter the discoverer of any placer claim shall, within thirty days of the date of discovery, record such claim with the recorder of the mining district in which it is situated, if such district be organized, and shall within ninety days from the date of discovery, cause to be recorded such claim in the office of the County Clerk and ex-Officio Register of Deeds of the county within which such claim may exist, by a location certificate, which shall contain in either or both cases the following facts:

1. The name of the claim, designating it as a placer claim.
2. The name or names of the locator or locators thereof.
3. The date of location.
4. The number of feet or acres thus claimed.
5. A description of the claim by such designation of natural or fixed objects as shall identify the claim beyond question. Before filing such location certificate, the discoverer shall locate his claim; first, by securely fixing upon such claim a notice, in plain painted, printed or written letters, containing the name of the claim, the name of the locator or locators, the date of discovery, and the number of feet or acres claimed; second, by designating the surface boundaries by substantial posts or stone monuments at each corner of the claim. (S. L. 1888, Ch. 40, Sec. 22.)

ASSESSMENT WORK ON PLACER CLAIMS.

Sec. 22. For every placer claim, assessment work, as hereinafter provided, shall be done during each and every calendar year after the first day of January following the date of location. Such assessment work shall consist in manual labor, permanent improvements made on the claim in buildings, roads or ditches made for the benefit of working such claims, or after any manner, so long as the work done accrues to the improvement of the claim, or shows good faith and intention on the part of the owner or owners, and their intention to hold possession of said claim. (S. L. 1888, Ch. 40, Sec. 23.)

AMOUNT OF ASSESSMENT WORK.

Sec. 23. On placer claims of an area of one hundred and sixty acres heretofore or hereafter located in this state, and not situated in an organized district, not less than one hundred dollars' worth of assessment work shall be performed during each calendar year, from the first day of January after the date of location. On every placer mining claim so located, of less than one hundred and sixty acres, the amount of annual assessment work shall be at the rate of sixty-two and one-half cents per acre for each and every acre and fraction thereof; provided, that the total amount to be annually expended be in no case less than fifteen dollars. (S. L. 1888, Ch. 40, Sec. 23.)

ASSESSMENT WORK UPON CONTIGUOUS CLAIMS.

Sec. 24. When two or more placer mining claims lie contiguous and are owned by the same person, persons, company or corporation, the yearly expenditure of labor and improvements required on each of such claims may be made upon any one of such contiguous claims, if the owner or owners shall thus prefer. (S. L. 1888, Ch. 40, Sec. 23.)

AMOUNT OF ASSESSMENT WORK MAY BE REGULATED BY MINING DISTRICT.

Sec. 25. Where such placer claims are situated in an organized mining district, or if they are unally embraced in such a district, then the amount of assessment work and the manner of its accomplishment shall be regulated entirely by the district laws, whether the amount of work required annually be greater or less than the amount heretofore set forth as required of placer claims not located in such districts. (S. L. 1888, Ch. 40, Sec. 23.)

EFFECT OF FAILURE TO DO ASSESSMENT WORK.

Sec. 26. Upon failure of the owners to do or have done the assessment work required within the time above stated, such claim or claims upon which such work has not been completed, shall thereafter be open to relocation on or after the first day of January of any year after such labor or improvements should have been done, in the same manner and on the same terms as if no location thereof had ever been made; provided, that the original locators, their heirs, assigns or legal representatives have not resumed work upon such claim or claims after failure, and before any subsequent location has been made. (S. L. 1888, Ch. 40, Sec. 23.)

AFFIDAVIT OF ASSESSMENT WORK DONE.

Sec. 27. Upon completion of the required assessment work for any mining claim, the owner or owners, or agent of said owner or owners, shall cause to be made by some person engaged in performing the work, an affidavit setting forth that the required amount of work was performed, which affidavit shall, within thirty days after the completion of the work, be recorded in the office of the recorder of the district in which the claim is situated, if such be organized, or if such district be not organized, such affidavit shall, within sixty days of completion of the work, be filed for record in the office of the County Clerk and ex-Officio Register of Deeds of the county in which said claim is located. (S. L. 1888, Ch. 40, Sec. 23.)

PATENTS TO PLACER CLAIMS.

Sec. 28. When any person, persons or association, they and their grantors have held and worked their placer claims in conformance with the laws of this state and the regulations of the mining district in which such claim exists, if such be organized, for five successive years after the first day of January succeeding the date of location, then such person, persons or association, they and their grantors, shall be entitled to proceed to obtain a patent for their claims from the United States without performing further work; but where such person, persons or association, they and their grantors, desire to obtain a United States patent before the expiration of five years from the date heretofore mentioned, they shall be required to expend at least five hundred dollars' worth of work upon a placer claim. (S. L. 1888, Ch. 40, Sec. 24.)

MINERS' LABOR LIEN.

Sec. 29. Every miner, or other person, who, at the request of the owner of any ledge or lode of quartz bearing gold, silver, lead, cinnabar or copper, or any coal bank or mine, shall work in or upon said mine or bank, or do assessment work upon or in any mining claim, lode or placer, or upon or in any sod, well or lake, oil well or spring,

shall have a lien upon such vein or lode, mine or bank, well, lake or spring, to the amount due at anytime, when a demand shall be made upon such owner, or his or their agent, for money due for such labor, and payment shall be refused. (S. L. 1897, Ch. 62, Sec. 1.)

NOTICE OF MINERS' LABOR LIEN.

Sec. 30. When any sum, exceeding ten dollars, for labor performed by any miner, or other person upon, or in any mine or coal bank specified in this chapter, shall be due and unpaid for ten days, it shall be competent for the person or persons to whom such sum of money shall be due, to file a notice in the office of the County Clerk in the county where such mine is situated, at any time within six months after the last day upon which work was done by him. Which said notice shall, in substance, set forth the fact that the party performed the labor (naming the kind) for a party or company (naming the party or company), that such labor was performed under a contract (stating the substance); also, the time when the party commenced and ceased to work, the amount still due and unpaid, together with a description of the mine or coal bank upon which such work was performed, which statement shall be verified by the affidavit of the party so filing it, and when filed, the County Clerk shall record the same in a "lien book," the same as required in the case of mechanic's notice of lien. (S. L. 1897, Ch. 64, Sec. 1.)

COAL MINES NOT INCLUDED IN THIS CHAPTER.

NOTE.—With the exception of Secs. 27 and 30, none of the provisions of the foregoing sections of the mining laws apply to the working of coal mines.

STATEMENT.

Showing the property valuations of the year 1897 compared with the year 1896:

Property Assessed.	Value, 1896.	Value, 1897.
Railroad and car companies' property..\$	7,533,047.50	\$ 7,541,623.50
Telegraph lines	107,186.50	98,570.00
Land and improvements	6,858,549.96	6,893,626.12
Town lots and improvements	5,439,383.50	5,302,036.34
Cattle	3,732,558.00	4,020,548.00
Horses	1,037,009.00	1,038,027.00
Mules and asses	51,224.50	51,124.00
Sheep and goats	2,317,084.50	2,506,286.00
Swine and dogs	14,326.25	20,870.35
Musical instruments	58,368.00	58,643.00
Clocks, watches and jewelry	27,310.00	32,697.26
Capital in merchandise and manufactures	1,367,779.40	1,467,822.00
Carriages and wagons	200,355.75	217,304.16
Moneys and credits after deducting debts	442,043.08	413,001.00
Stock in corporations	214,629.00	61,365.00
Insurance premiums over losses	16,225.00	—
Farming utensils and mechanics' tools.	122,892.00	133,766.00
Private libraries	19,298.00	19,130.00
Household furniture (\$100 exempt)	112,802.80	88,013.63
Other property	356,621.91	336,008.95
Totals	\$30,028,694.65	\$30,300,462.32

Post Offices in Wyoming.

ALBANY COUNTY.

Binford	Owen	Springhill
Centenial	Pollock	Summit
Hatton	Redbuttes	Tie Siding
<i>Laramie</i>	Rockcreek	Toltec
Little Medicine	Sherman	Woods
Lookout	Sibylee	Wyoming
Moore		

BIG HORN COUNTY.

Alamo	Frannie	Middleton
<i>Basin</i>	Hartman	Null
Bonanza	Hyattville	Otto
Burlington	Ishawood	Redbank
Clark	Jordan	Sarver
Coburn	Kane	Shell
Cody	Kirwin	Sunshine
Corbett	Lovell	Tensleep
Embar	Marquette	Thermopolis
Fenton	Meeteetse	Wise

CARBON COUNTY.

Baggs	Ferris	Morgan
Bennett	Fort Fred Steele	Percy
Carbon	French	<i>Rawlins</i>
Collins	Hanna	Rockdale
Dana	Harrison	Saratoga
Dixon	Leo	Widdowfield
Elk Mountain	Mead	Willows
Encampment	Medicine Bow	

CONVERSE COUNTY.

Beaver	Hatcreek	Manville
Boxelder	Inez	Orin
Careyhurst	Kirtley	Ross
<i>Douglas</i>	Labonte	Royston
Glenrock	Lotsprings	Theresa
Guthrie	Lusk	Voorhees

CROOK COUNTY.

Alva	Forest	Mona
Barrett	Folks	Moorcroft
Beulah	Gillette	Morse
Carlile	Hulett	Omstead
Carroll	Inyokara	Oxus
Eothen	Linden	<i>Sundance</i>
Farrall	Manhattan	Welcome
Felix		

FREMONT COUNTY.

Arapahoe	Fort Washakie	Miners' Delight
Agency	Hailey	Myersville
Atlantic City	<i>Lander</i>	Newfork
Bruce	Leckie	Rongis
Cleo	Leedsdale	Saint Stephens
Cora	Lewiston	Shoshone
Dallas	Lost Cabin	Agency
Deranch	Lyons	South Pass City
Debois	Milford	

JOHNSON COUNTY.

<i>Buffalo</i>	Kearney	Su. sex
Eureka	Mayoworth	Trabing
Greub	Ono	Twaton
Griggs		

LARAMIE COUNTY.

Archer	Frederick	Little Horse
Arcola	Glendo	Macfarlane
Ariosa	Goldsmith	Meriden
Badger	Granite Canyon	Patrick
Bordeaux	Grant	Phillips
Borie	Hartville	Pinebluff
<i>Cheyenne</i>	Hecla	Pratt
Chugwater	Hillsdale	Salem
Davisranch	Iron Mountain	South Bend
Diamond	Islay	Torrington
Egbert	Jetsam	Trelona
Fairbank	Lagrange	Twobar
Fort Laramie	Lakeview	Uva
Fort Russell	Little Bear	Wheatland

NATRONA COUNTY.

Alcova	Ervay	Splitrock
Berthaton	Freeland	Winthrop
Bessemer	Johnstown	Wolton
<i>Casper</i>		

SHERIDAN COUNTY.

Arvada	Bigred	Ranchester
Baldmountain	Clearmont	<i>Sheridan</i>
Banner	Dayton	Slack
Beckton	Higby	Wolf
Big Horn	Parkman	

SWEETWATER COUNTY.

Almond	Piper	Granger
Bittercreek	Rock Springs	<i>Greenriver</i>
Blackbuttes	Sweetwater	Lucerne
Bryan	Wamsutter	Maxon
Creston		

UINTA COUNTY.

Afton	<i>Evanston</i>	Labarge
Almy	Fairview	Lonetree
Aspen	Fontenelle	Midway
Auburn	Fort Bridger	Opal
Beckwith	Fossil	Piedmont
Bigpinye	Freedom	Redcanon
Burntfork	Grover	Robertson
Carter	Hamsfork	Stanley
Cokeville	Hilliard	Thayne
Diamondville	Jackson	Viola
Elk		

WESTON COUNTY.

Boyd	Merino	<i>NewCastle</i>
Cambria		

NATIONAL PARK RESERVATION.

Mammoth Hot Springs



List of Wyoming Newspapers.

NAME.	CITY.	COUNTY	EDITORS.
Laramie Republican*.....	Laramie.....	Albany	W. E. Chaplin
Laramie Boomerang*.....	Laramie.....	Albany	P. E. Lowe
Times.....	Laramie.....	Albany	F. W. Ott
Wyoming Dispatch.....	Basin City.....	Big Horn....	W. H. Hunt
Big Horn County Rustler..	Hyattville	Big Horn....	Daggett & Somers
Big Horn County News.....	Meeteetse	Big Horn....	C. H. Bebb
Courier	Otto	Big Horn....	Lou Blakesly
Carbon County Journal	Rawlins.....	Carbon.....	Will Reid
Rawlins Republican†.....	Rawlins.....	Carbon.....	Geo. W. Perry
Saratoga Sun.....	Saratoga	Carbon.....	J. F. Crawford
Flatte Valley Lyre.....	Saratoga	Carbon.....	Gertrude Huntington
Grand Encampment Herald..	Encampment.....	Carbon.....	Drury Bros.
Bill Barlow's Budget.....	Douglas.....	Converse	M. C. Barrow
Wyoming News.....	Douglas.....	Converse	
Herald.....	Lusk	Converse	James Mayes
Gazette	Sundance	Crook.....	J. A. McNaught
Monitor.....	Sundance	Crook.....	Joe Lytle
Big Horn River Pilot	Thermopolis.....	Fremont	
Clipper	Lander.....	Fremont	C. G. Coutant
Indian Guide	Shoshone Agency ..	Fremont	W. P. Campbell
Mountaineer	Lander.....	Fremont	Cora V. Preston
Bulletin	Buffalo.....	Johnson.....	Mary M. Parmelee
Voice	Buffalo.....	Johnson.....	G. E. A. Moeller
Sun Leader*.....	Cheyenne	Laramie.....	E. A. Slack
Wyoming Tribune*.....	Cheyenne	Laramie.....	Frank Bond
World	Wheatland	Laramie.....	I. O. Middaugh
Tribune.....	Casper.....	Natrona.....	A. J. Moekler
Derrick	Casper.....	Natrona.....	P. C. Hayes
Enterprise.....	Sheridan	Sheridan	John S. Taylor
Pest	Sheridan	Sheridan	C. P. P. Story
New Deal.....	Sheridan	Sheridan	M. C. Green
Record	Dayton	Sheridan	M. W. Neevins
Miner.....	Rock Springs	Sweetwater ..	Robert Smith
Democrat	Rock Springs	Sweetwater ..	Pyles & Ewing
News-Register	Evanston.....	Uinta.....	J. U. Allard
Herald	Evanston	Uinta.....	W. T. Shaffer
Wyoming Press.....	Evanston.....	Uinta.....	G. A. McArthur
Camera	Kemmerer.....	Uinta.....	C. P. Diehl
News-Journal	New Castle.....	Weston	A. P. Putnam
Democrat.....	New Castle.....	Weston	H. A. Alden

* Daily and Weekly.

† Semi Weekly

YELLOWSTONE PARK.

BY GEORGE S. MARX.

The Yellowstone Park occupies an area reported as sixty-two miles long by fifty-six and one-half miles wide, making nearly four thousand square miles. It lies in the northwest corner of Wyoming, with the exception of about two miles which project over the southern border of Montana, and a strip of about the same width extending into Idaho on the west. It can be described as a region of hot springs, of geysers, mountains, canyons, lakes, rivers and waterfalls, the scenic beauty and grandeur of which are not excelled by any locality. Here are found the largest and most numerous geysers in the world, some of which throw up columns of boiling water in streams to a great height, while there are thousands of bubbling hot springs in whose depth are reflected all the prismatic colors of the rainbow.

The Mammoth Hot Springs, the Golden Gate, the Grand Canyon, a deep gorge twenty miles long and twelve hundred feet deep, the falls of the Yellowstone, one of which has a fall of three hundred and sixty feet, and the Yellowstone lake, a body of water lying in the southern central part of the park, of irregular shape, and about thirty miles long, are some of the more noticeable scenic features of the park.

It is an ideal place for camping parties traveling by private conveyance, and also for those who prefer transportation by regular stages. The hotel accommodations are pleasant and comfortable.

Since the act of Congress setting aside this portion of Wyoming as a national park, there has also been reserved by act of Congress a strip of heavily timbered land on both the south and east sides of the park proper, making an immense strip of pine forest reserved for no other purpose than to protect the stately pines, the destruction of which would not only detract from the beauty of this region but work incalculable damage to streams that have their headwaters in these forests.

The landscape in the timber reserve differs from that in the park only in the absence of the natural curiosities which make the latter so attractive and interesting.

While both the park and the reserve are within the boundary lines of the state of Wyoming, the government and control is a special one under the authority of the Federal Government.

HUNTING AND FISHING.

Wyoming has long been known as a field for sportsmen in search of large game, and hundreds of tourists annually hunt within its borders.

For nearly eighty years the hardy trapper penetrated the wilds of Wyoming in search of beaver, and in 1890 the Legislature of the territory passed an act prohibiting their capture for a period of ten years, in order to prevent their extermination. This act, repealed and re-enacted in 1895, protects beaver until the year 1900. From Strahorn's Handbook of Wyoming we quote: "We have it from reliable authority that the hardy spirits of northwestern fur companies trapped no less than 3,000,000 beaver along the northern range of mountains previous to 1825"—a statement which tells the whole story of early pioneering, with its train of thrilling episodes and soul-trying emergencies.

If 3,000,000 beaver were trapped in this state before 1825, it is impossible to even estimate the millions trapped in the last seventy years. Beaver increase rapidly when undisturbed, and their villages are found in immediate proximity to the ranches near the mountains.

The protection extended to them by the ranchmen generally has resulted in an appreciable increase in their numbers, and many of their former haunts have become re-populated.

For many years game was killed for food purposes at all seasons and in unlimited quantities, but it has been deemed best to restrict the open season for elk, deer and antelope to the months of September, October and November, and to make the sale of wild game unlawful at all times.

Stringent laws have been enacted for the protection of the few bison preserved in the Yellowstone National Park in case they wander into Wyoming, and it is unlawful to kill or pursue or remove any buffalo from the state.

The National Park being the great game preserve of the west, it naturally follows that the best hunting is to be found in the adjacent country, and that part of the country known as Jackson's Hole is, perhaps, better supplied with big game than any other part of the state.

In southern Wyoming elk, deer, bear, mountain lions and mountain sheep are found on the rugged heights of the Sierra Madre and Medicine Bow ranges.

The Big Horn range, in the north central part of the state, has long been known as a popular hunting ground for mountain sheep, as well as for the other species of game named above.

Antelope seem to be increasing in number in the past few years, and are to be seen on the plains in all parts of the state.

Sage chickens and grouse are to be found in abundance on the plains and in the mountains.

The first settlers in Wyoming discovered that the streams on the eastern slope of the continental divide did not contain trout such as were plentiful in the streams running into the Pacific ocean. The exception to this rule was in the National Park and the headwaters of the Yellowstone and Big Horn rivers. This is supposed to be by reason of a remarkable creek known as Two Ocean creek, which divides at Two Ocean pass, sending one branch to the Atlantic and the other towards the Pacific ocean, and through which trout can obtain a passage to the headwaters of the Yellowstone, and through that river stock all its tributaries.

It was determined to stock the streams on the Atlantic slope with trout, and during the past seven years, since statehood, the Wyoming Fish Commissioner has distributed 4,373,000 fish fry among the different streams, the greater number being planted in the North Platte and Laramie rivers and their tributaries, which penetrate the region once without native trout. The smaller streams in the northern part of the state have also been thoroughly stocked, and afford fine sport.

The principal varieties of fish distributed have been the Eastern Brook trout (*Salvelinus fontinalis*), Rainbow trout (*Salmo irideus*), Black-spotted Mountain trout (*Salmo mykiss*), the native trout found on the Pacific slope, the German Brown trout (*Salmo fario*), and a number of pike, which have been planted in the small lakes in eastern Wyoming.

These fish have made a wonderful growth, and brook trout weighing five pounds, and Rainbow trout weighing eleven pounds have been caught in the Platte river near Saratoga.

The Green river and tributaries being supplied with native trout, have needed little attention, although some of the western streams have been stocked with the Rainbow and Brook trout with great success.

The trout fishing in the headwaters of the Snake river is unsurpassed, possibly, in the world, while thousands of fine trout are caught in the North Platte and Laramie rivers, and in the streams in the Big Horn mountains.

EXTRACT FROM GAME LAWS.—IN FORCE JULY 1, 1898.

The male animals only of deer, elk, moose, mountain sheep, mountain goat or antelope may be killed for food purposes only, during the months of September, October and November of each year. It is unlawful to trap any of the above-named animals or to use dogs for the purpose of running or coursing them. It is unlawful to obtain by barter or buy any green, tanned or untanned hides or horns of any of the animals mentioned above, and it is unlawful for any railway, stage or express company to receive for transportation any carcass, or part of carcass, except that mounted heads or stuffed birds or animals, killed in accordance with law, may be transported to any point within or without the state.

Partridges, pheasant, prairie chicken, prairie hen or grouse may be shot from August 15 to December 1 of each year; sage chicken may be shot from July 15 to October 1; wild duck, brant, geese and swan may be shot from September 1 to May 1.

Speckled trout, land-locked salmon, grayling or California trout, can be caught with fishing tackle only (consisting of rod or pole, line and hook) during the months of May, June, July, August and September.

It is unlawful to seine, trap or snare any fish or to use any explosive substance, or poison, in any of the waters of this state for the purpose of securing or killing fish.

Any person, or persons, having in their possession and offering for sale, or causing to be offered for sale, any game, game fish or game fowl, killed within the boundaries of the state of Wyoming, shall be fined not to exceed one hundred dollars.

Non-residents of Wyoming may hunt the male animals mentioned above during the months of September, October and November, upon procuring a license from a Justice of the Peace, for which a fee of twenty dollars is charged.

BRIEF NOTES.

The state of Wyoming welcomes settlers seeking homes, and has many inducements to offer.

To investors the state offers protective laws and good opportunities for investment.

The natural resources of the state justify the expectation of great future development.

The oil belt extends entirely across the state from southwest to northeast.

Natural gas is known to exist at various points adjacent to the explored oil belt.

Excellent brick clay is found and used in every part of the state.

It is well known that potatoes grown by irrigation, as in Wyoming, are of exceptional quality.

It is equally true that all vegetables and fruit raised in the same manner are sound and free from imperfections.

Wyoming wheat, grown by irrigation, took the first prize at the World's Fair, and the flour mills of Wyoming manufacture excellent flour.

Wyoming produced seven hundred and forty-four tons of coal per annum for each man employed in the mines, an average probably exceeded by no other state.

Alfalfa is an important Wyoming crop, the yield approximating four tons per acre.

Ranchmen combining live stock and agriculture, have been very successful.

Two hundred and ninety-eight thousand six hundred and ninety-seven cattle, 79,284 horses and 1,391,795 sheep were assessed for taxation in Wyoming in 1897. This number will be increased in 1898. Their actual value exceeds \$17,000,000.

The wool clip of Wyoming for 1897 approximated 14,000,000 pounds. The average weight, per fleece, was about eight pounds, and the average price, per pound, eight cents.

Owners of cattle and sheep are rapidly improving the grades of their herds and flocks.

It is estimated that one-quarter of the area of Wyoming is underlaid with coal, the seams varying from two to seventy-five feet in thickness.

In many localities ranchmen obtain their fuel from veins opened in the immediate vicinity of their homes.

In other localities they secure fuel, and also timber for building purposes, from the adjacent mountains.

Food fish are now found in almost every lake and stream in the state.

The climate of Wyoming is healthful, mild, equable and invigorating; cool in summer and mild in winter, with but few snowstorms until early spring.

Wyoming will be noted as a resort for the sick in search of health. It contains many wonderful hot springs, whose curative properties are well known, but which are as yet remote from railroad communications.

Large areas of state lands have been set aside for the benefit of the schools, and the income from this source is rapidly increasing.

The educational advantages of the state are a matter of pride to its citizens.

In 1897 there were 11,937 pupils enrolled in the public schools of the state.

Of one thousand young men who enlisted in Wyoming during June, 1898, not one was unable to sign his name to the muster roll, and every man had received a fair education.

Wyoming furnished more volunteers for the United States army, in proportion to population, than any other state in the Union, and with fewer rejections, in proportion to the number examined.

It is a feature of the public buildings of Wyoming that they fully represent the amount invested in them, nor has the state been over-burdened with debt for their construction.

Yellowstone Park, Jackson Hole, Big Horn basin and many other localities furnish beautiful places of recreation during the summer months.

It is a peculiarity of the native grasses that they cure upon the stalk, retaining all their nutriment, thus affording excellent winter pasturage for live stock.

Wyoming has a State Veterinarian, and careful inspection and prompt action combine to exterminate all cases of contagious diseases among animals brought into the state. Outside of an occasional case of glanders among horses and scab among sheep, there are no contagious diseases among animals. District sheep inspectors exterminate scab in sheep wherever found.

The valleys of the North Platte and Big Horn rivers, with elevations of from 3,000 to 7,000 feet, extending several hundred miles, and the lands lying near the smaller tributaries, afford opportunities for thousands of farmers to acquire land and carry on farming and stock raising successfully, while the development of the mineral wealth of the state will furnish a market for their production.

On August 30, 1890, W. J. Sturgis of Johnson county, harvested the largest crop of potatoes ever grown on one acre of ground, namely, nine hundred and seventy-four bushels and forty-eight pounds. Of these, eight hundred and thirty-eight bushels and forty pounds were merchantable, and one hundred and thirty-six bushels and eight pounds were small. These potatoes sold for a net profit of seven hundred and fourteen dollars, exclusive of two prizes of two hundred and fifty dollars each, given by the American Agriculturist and the state of Wyoming.

The number of homestead entries in the Cheyenne Land Office during May, 1898, was greater than during any previous month for four years preceding.

Persons desiring information concerning the agricultural possibilities of the state, should read the articles in this volume by Professors Mead and Buffum.

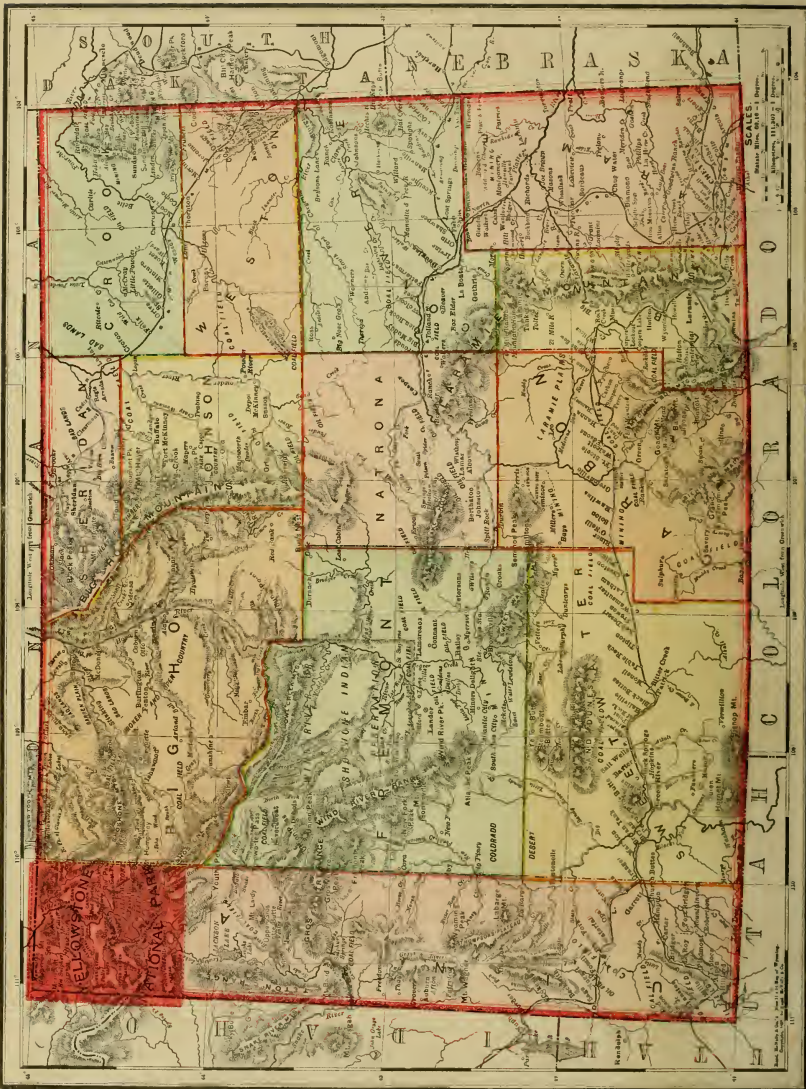
Those desiring information concerning the mineral resources, are referred to the article by Professor Knight.

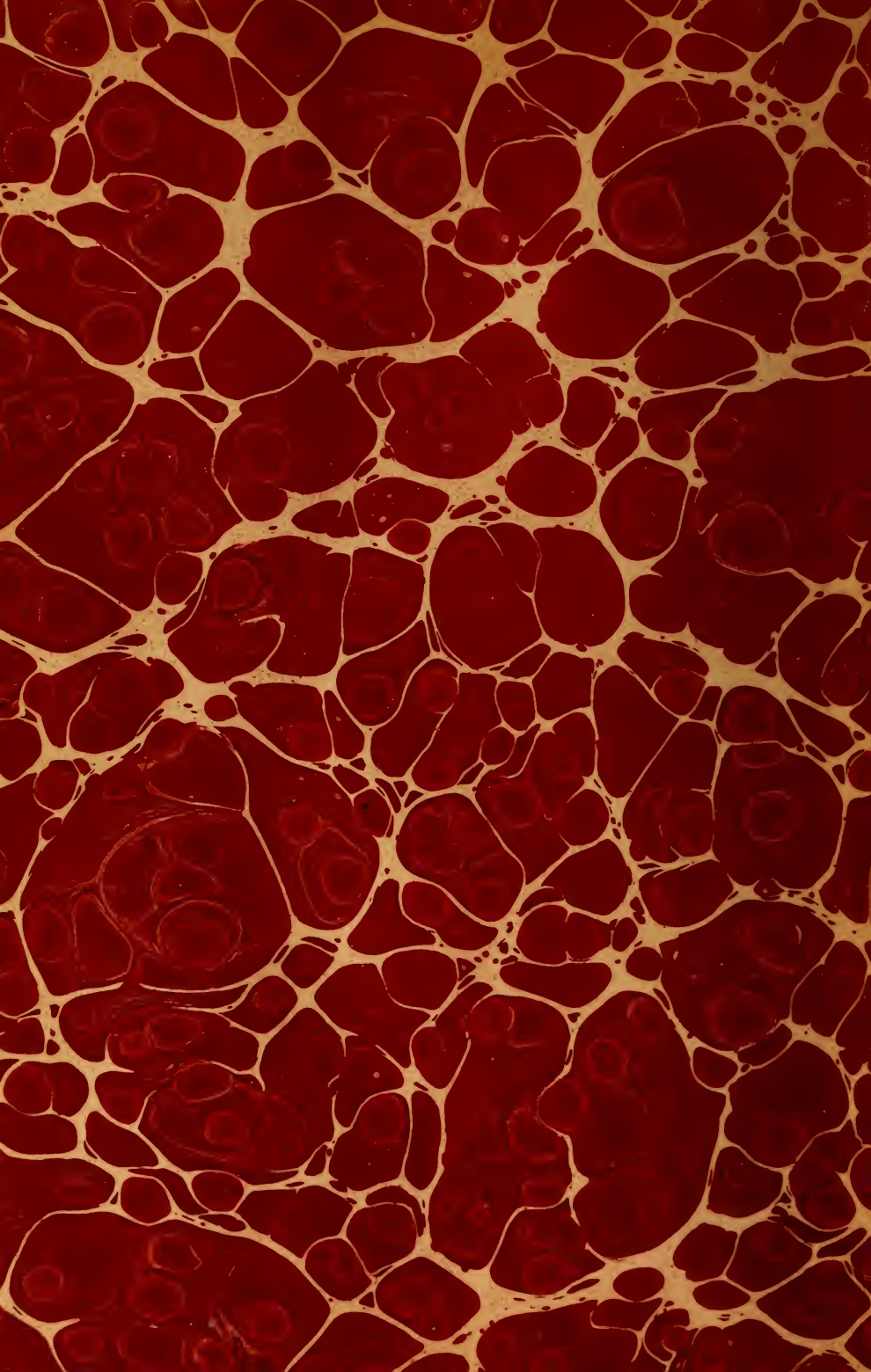
Elevation of Wyoming Cities.

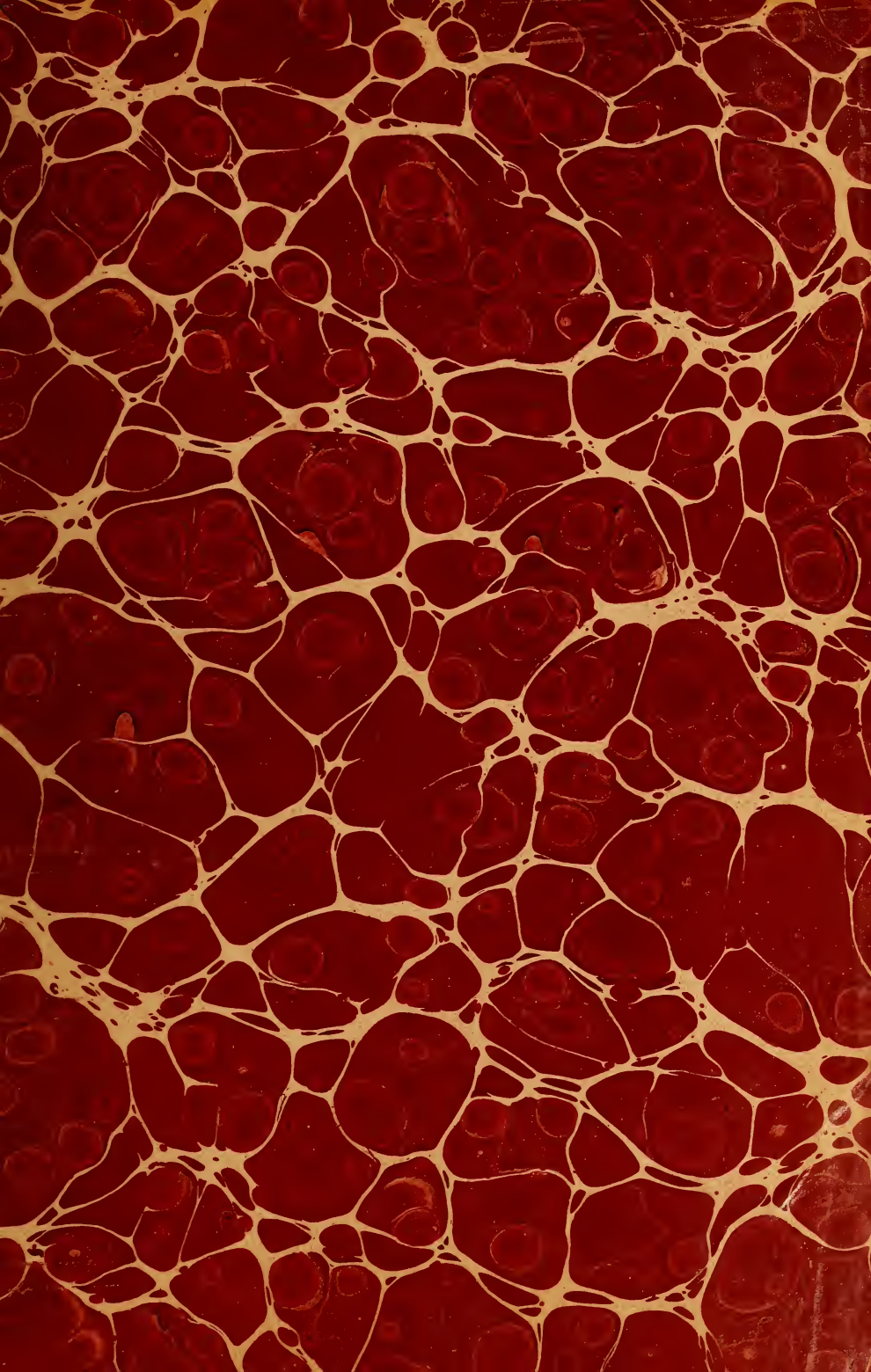
City.	Elevation. (feet.)	City.	Elevation. (feet.)
Alcova	6,000	Hyattville	4,550
Atlantic City.....	7,850	Jackson's Hole.....	6,820
Buffalo	4,600	Jackson's Lake....	6,800
Basin	3,400	Lander	5,372
Cambria	5,400	Laramie	7,149
Casper	5,118	Lovell	4,200
Carbon	6,821	Lusk	5,007
Cheyenne	6,050	Medicine Bow.....	6,562
Cheyenne (Capitol) .	6,101	Newcastle	4,319
Douglas	4,816	Otto	4,011
Evanston	6,759	Rawlins	6,744
Embar	5,900	Rock Springs.....	6,260
Fort Laramie.....	4,270	Rockcreek	6,704
Fort Steele.....	6,505	Sherman	8,247
Fort Washakie....	5,462	Sheridan	3,750
Fort Yellowstone..	6,370	Sundance	4,700
Four Bear.....	6,500	Saratoga	7,000
Green River.....	6,077	Thermopolis	4,600
Glenrock	4,900	Tie Siding.....	7,890
Hanna	6,788	Wheatland	4,700

Altitude of Mountains.

Name.	Mountain Range.	Altitude (feet.)
Big Horn.....	.....	8,000 to 12,000
Bradley's Peak.....	Seminole	9,500
Chimney Rock.....	Wind River.....	11,853
Cloud Peak	Big Horn	12,500
Mount Doane.....	Yellowstone	10,118
Elk Mountain.....	Medicine Bow.....	11,511
Fremont's Peak.....	Wind River.....	13,570
Grand Encampment.....	Park	11,003
Grand Teton	Teton	13,691
Index Peak.....	Yellowstone	11,740
Laramie Peak.....	Laramie	11,000
Laramie Range.....	.....	7,000 to 9,000
Medicine Peak.....	Park	12,231
Medicine Bow.....	.....	8,000 to 12,000
Mount Moran.....	Teton	12,000
Park Range, in Wyoming.....	.....	11,500
Phlox Mountain	Owl Creek	9,136
Pilot Knob.....	Yellowstone	11,977
Quien Hornet	Utah	9,300
Sailor Mountain.....	.....	10,046
Seminole Mountains (highest).....	.....	10,500
Washakie Needles.....	12,253
Mount Washburn.....	10,388
Yount Peak.....	Yellowstone	12,250







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